National Aeronautics and Space Administration

High Flyers Alphabet Activity Book

For kids!

National Aeronautics and Space Administration

Aeronautics Research Mission Directorate
Washington, DC 20546-0001
http://www.aeronautics.nasa.gov/education.htm
http://www.aeronautics.nasa.gov/

www.nasa.gov

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Introduction

The National Aeronautics and Space Administration (NASA) conducts research for aeronautics, too! This High Flyers Alphabet Activity book has been created to introduce some basic aeronautics terms for children attending kindergarten through second grade. We want them to realize that many aeronautics terms and concepts surround them every day. These activities show how an alphabet letter can be related to an aeronautics concept and basic aeronautics terms. The child is invited to look at each of the letters, trace the letter, and print the letter in the space provided. We hope they enjoy doing the activities, too. Answers to the activities can be found on the last few pages of this book.

About NASA

NASA is world-renowned for its research contributions to aircraft engines. We are world class in providing advanced technologies to U.S. industry, making engines more reliable and efficient. We partner with industry to create more economical air travel for the public, using engines that pollute less and are quiet to operate. We also pursue breakthrough technologies that will allow us, one day, to travel above the speed of sound using supersonic and hypersonic air vehicles.

Please visit our Web sites to learn more about NASA aeropropulsion, aeronautics research, and outreach activities.

NASA
http://www.nasa.gov/

NASA Aeronautics Research Mission Directorate
http://www.aeronautics.nasa.gov/

NASA Aeronautics Education
http://www.aeronautics.nasa.gov/education.htm

NASA Education for Students
http://www.nasa.gov/audience/forstudents/index.html

National Math and Science Standards

	A	B	C	D	E	F	G	H	I	J	K	L	M
Mathematic Standards													
Number and operations			✈		✈	✈		✈					✈
Algebra													
Geometry		✈		✈									✈
Data analysis and probability		✈	✈	✈	✈		✈	✈	✈	✈	✈		✈
Problem solving	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈	✈	✈
Reasoning and proof	✈		✈			✈	✈	✈	✈	✈	✈	✈	✈
Communication													
Connections	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈
Representation	✈	✈	✈		✈	✈		✈					✈
Science Process Skills													
Compare	✈	✈	✈		✈	✈		✈	✈	✈	✈	✈	✈
Describe													
Sort	✈	✈	✈		✈	✈			✈			✈	
Predict						✈					✈		
Manipulation		✈		✈			✈		✈			✈	✈
Classification						✈						✈	✈
Grouping			✈			✈		✈	✈	✈	✈		
Interpret data	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈
Make models							✈						
Inferring	✈	✈	✈	✈		✈		✈	✈	✈	✈	✈	✈
Observing	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
Science Content Standards K–4													
Physical science	✈	✈	✈	✈	✈	✈	✈		✈		✈	✈	✈
Position and motion of objects	✈	✈	✈	✈	✈	✈	✈		✈			✈	
Properties of objects/materials		✈			✈						✈	✈	✈
Unifying concepts/processes	✈	✈	✈	✈		✈	✈	✈	✈	✈		✈	✈
Evidence, models, and explanation	✈						✈	✈	✈	✈		✈	✈
Form and function	✈	✈	✈	✈		✈	✈		✈	✈		✈	✈
Earth science			✈	✈		✈					✈		
Objects in the sky		✈	✈	✈	✈							✈	
Changes in earth and sky											✈		
Science and technology	✈	✈			✈		✈		✈	✈		✈	✈
Abilities of technological design	✈	✈			✈		✈			✈			
Understand science/technology					✈				✈	✈		✈	✈
Scientific inquiry	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈

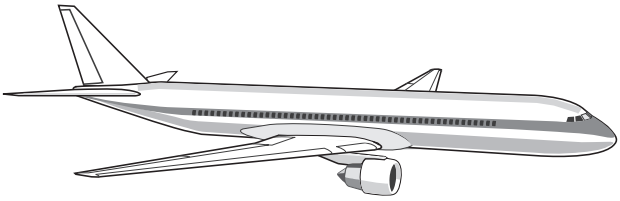
National Math and Science Standards

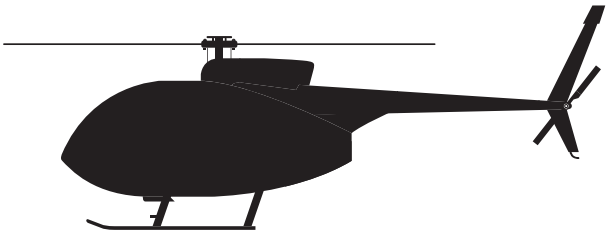
	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Mathematic Standards													
Number and operations	✈					✈	✈					✈	✈
Algebra													
Geometry			✈			✈			✈	✈	✈		
Data analysis and probability	✈		✈	✈			✈	✈	✈	✈		✈	✈
Problem solving	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
Reasoning and proof			✈		✈	✈	✈		✈		✈	✈	✈
Communication													
Connections	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
Representation	✈	✈	✈	✈		✈	✈	✈	✈	✈	✈	✈	✈
Science Process Skills													
Compare		✈	✈	✈			✈	✈	✈	✈	✈		✈
Describe						✈			✈		✈	✈	
Sort	✈	✈	✈				✈	✈					
Predict													
Manipulation	✈		✈		✈	✈	✈	✈	✈		✈	✈	
Classification		✈											
Grouping		✈				✈		✈					✈
Interpret data	✈	✈	✈	✈	✈		✈	✈	✈	✈	✈	✈	✈
Make models						✈			✈		✈	✈	
Inferring	✈		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
Observing	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
Science Content Standards K–4													
Physical science			✈	✈		✈	✈	✈	✈	✈	✈		✈
Position and motion of objects		✈	✈	✈		✈	✈	✈	✈	✈	✈	✈	✈
Properties of objects/materials						✈	✈	✈					
Unifying concepts/processes	✈		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
Evidence, models, and explanation	✈		✈	✈		✈			✈	✈	✈	✈	✈
Form and function	✈		✈			✈	✈	✈		✈			
Earth science						✈	✈	✈					✈
Objects in the sky					✈	✈	✈						✈
Changes in earth and sky													
Science and technology		✈	✈	✈		✈	✈	✈		✈	✈	✈	✈
Abilities of technological design			✈	✈		✈			✈	✈			
Understand science/technology			✈	✈		✈	✈	✈		✈	✈	✈	✈
Scientific inquiry	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈

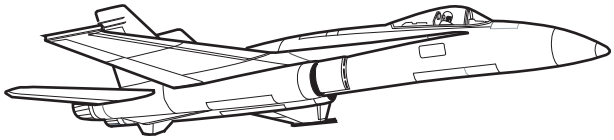
Aa Aa

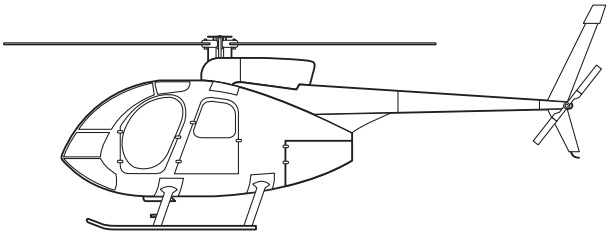
aircraft

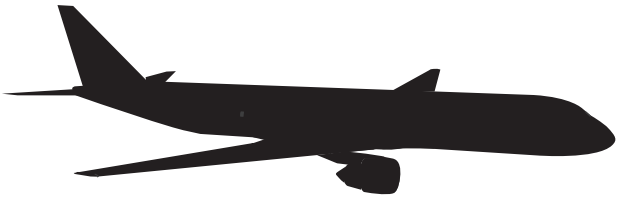
Draw a line to match each **aircraft** to its shadow.

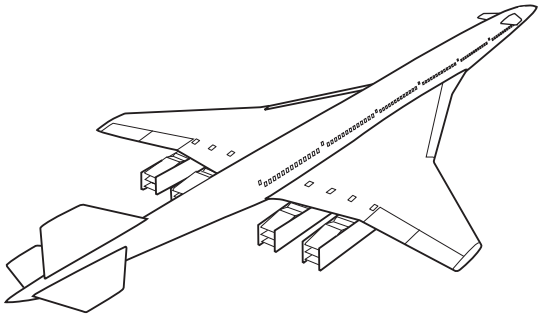


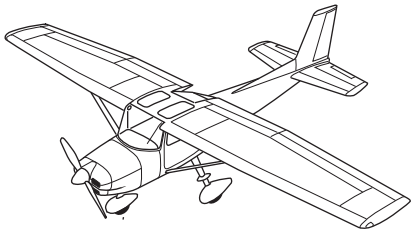


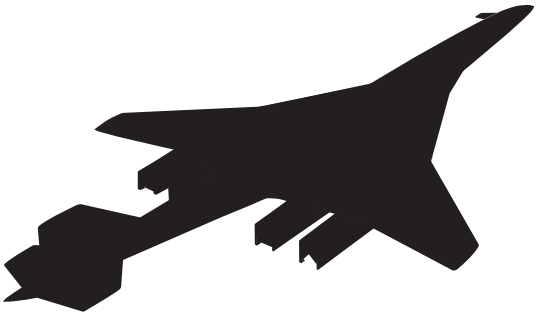






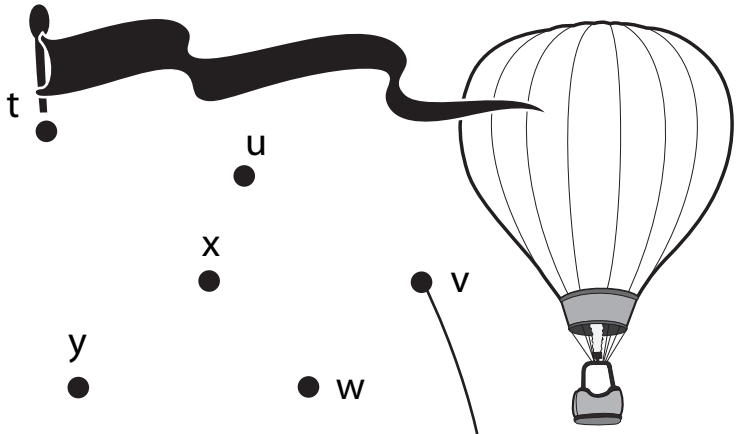


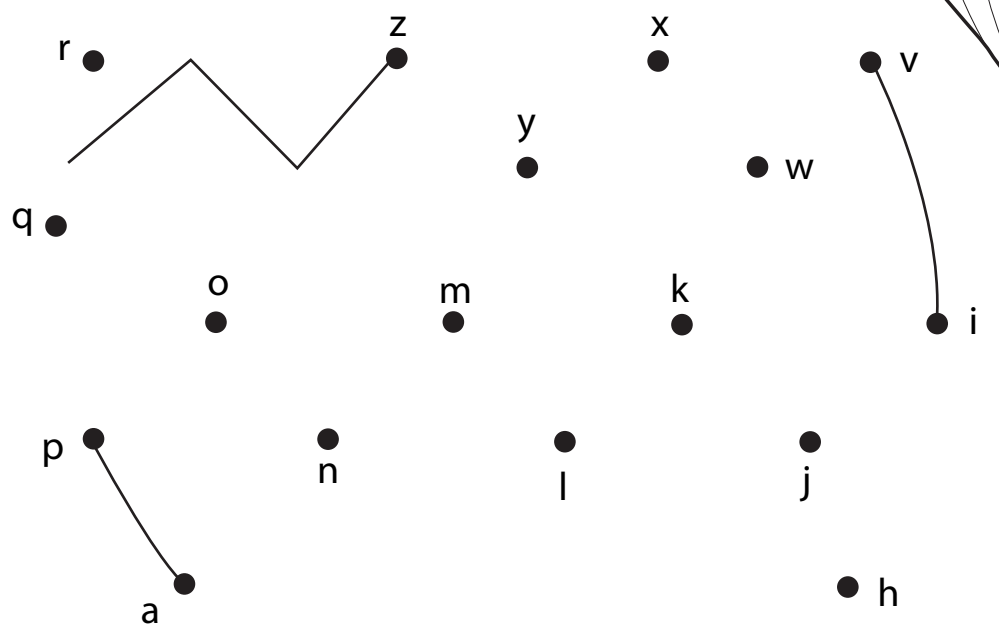


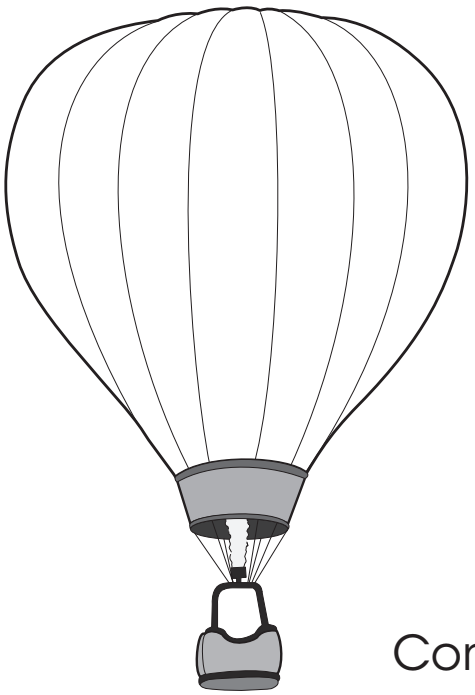


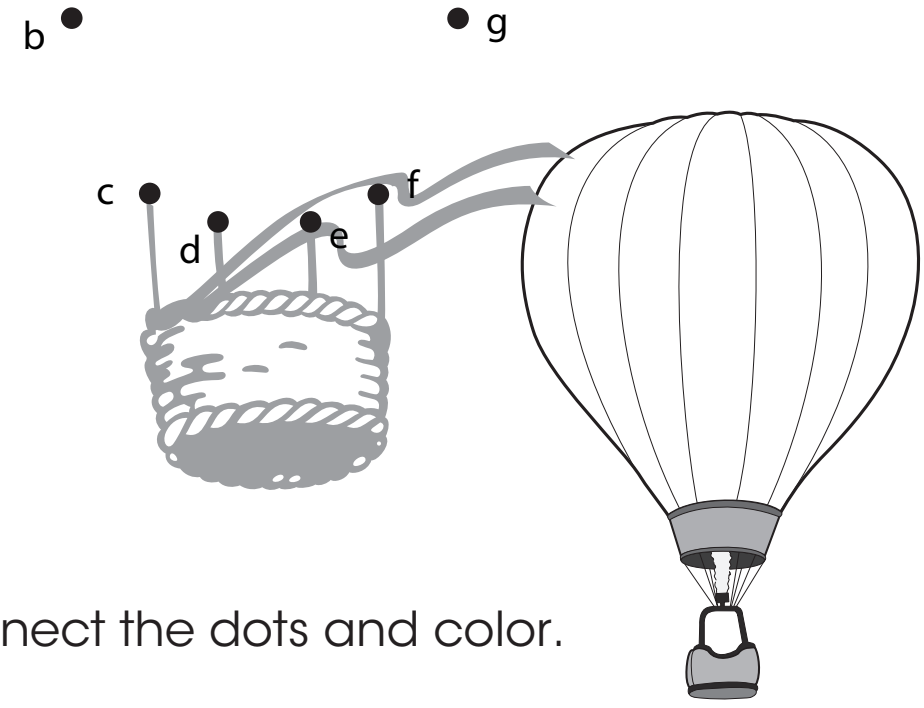
Bb Bb

balloon







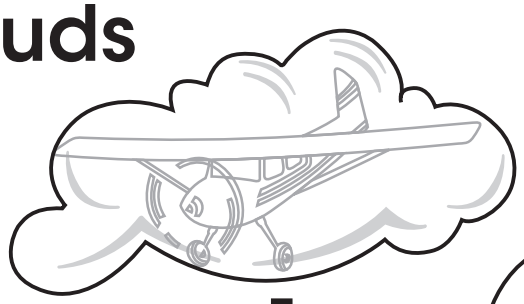


Connect the dots and color.

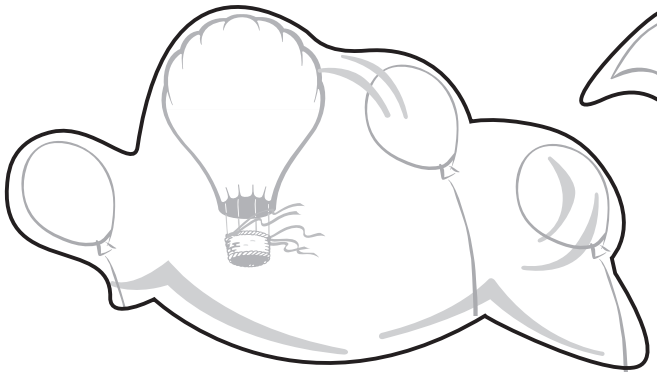
Cc C c

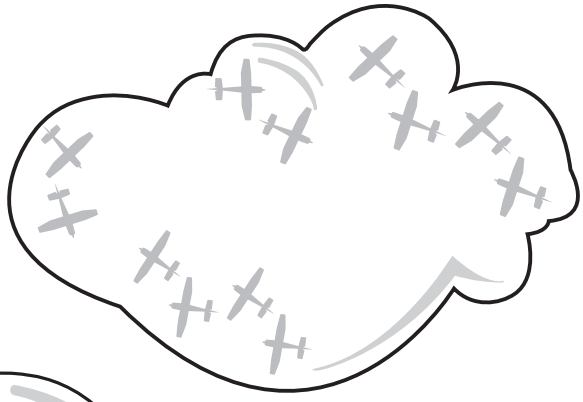
clouds

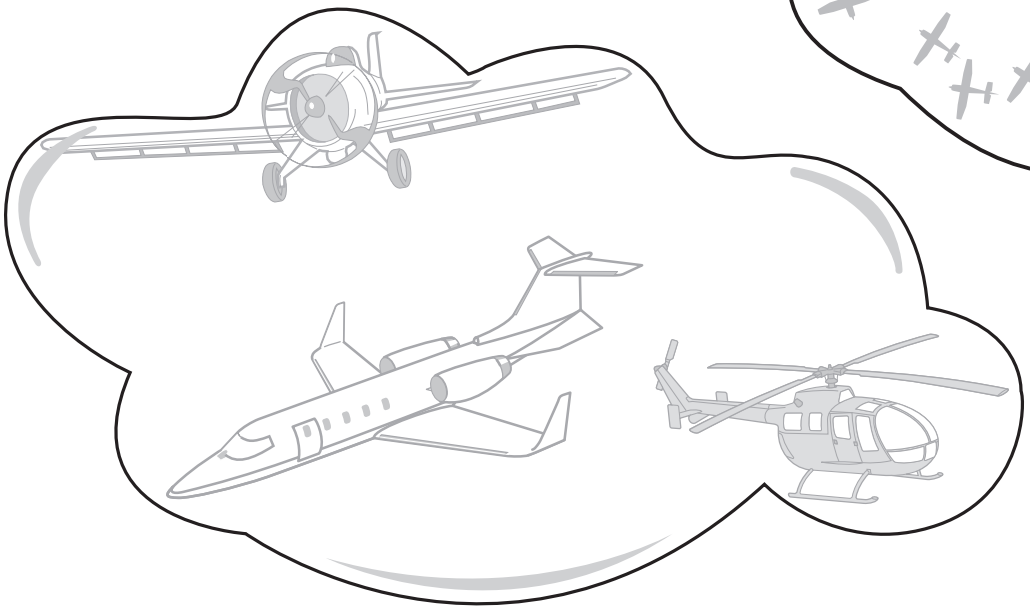
Count the pictures hidden in the **clouds.**



1







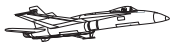
Dd Dd

down

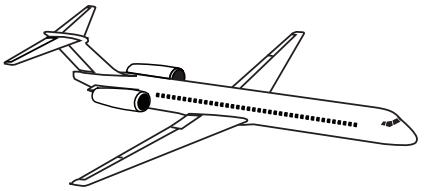
Follow the line and help the skydiver guide the parachute **down** to the target.

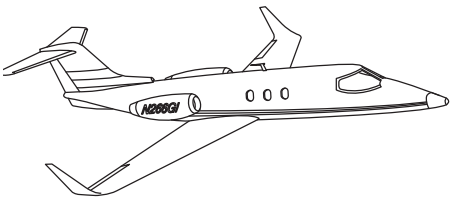
Ee Ee

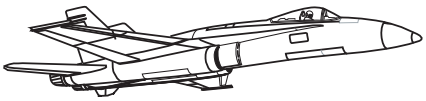
engine

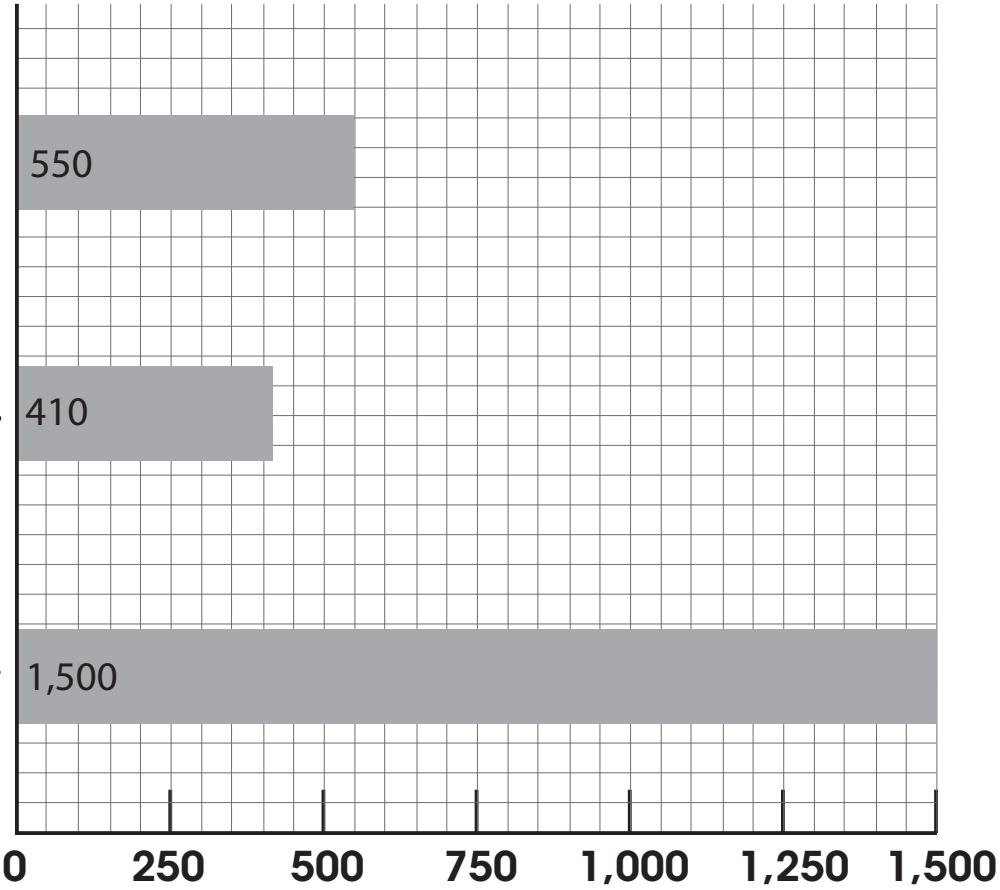
Each aircraft has a different type of engine. The engines move the aircraft through the air at different speeds. A passenger jet  flies through the air at 550 miles per hour. A smaller private aircraft  flies through the air at 410 miles per hour. A fighter jet  flies through the air at 1,500 miles per hour.

The chart below shows the speed at which each aircraft flies. Use the graph below to complete the activity on the next page.

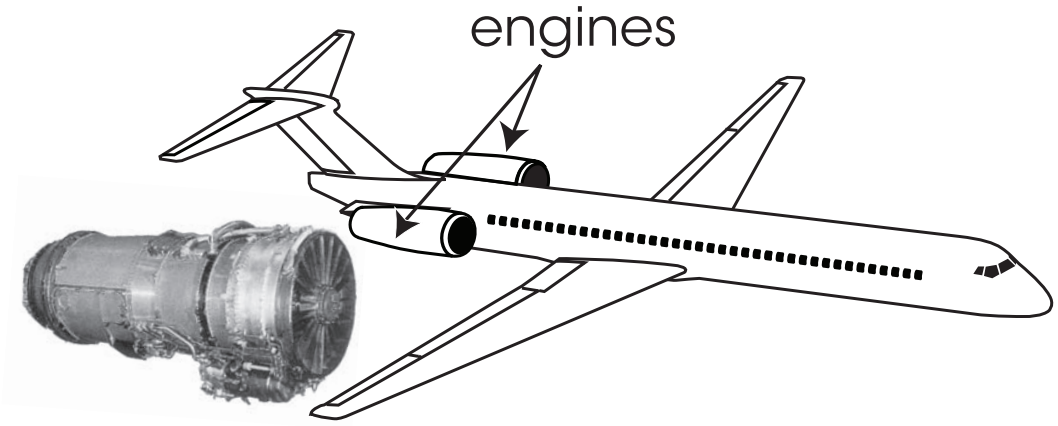




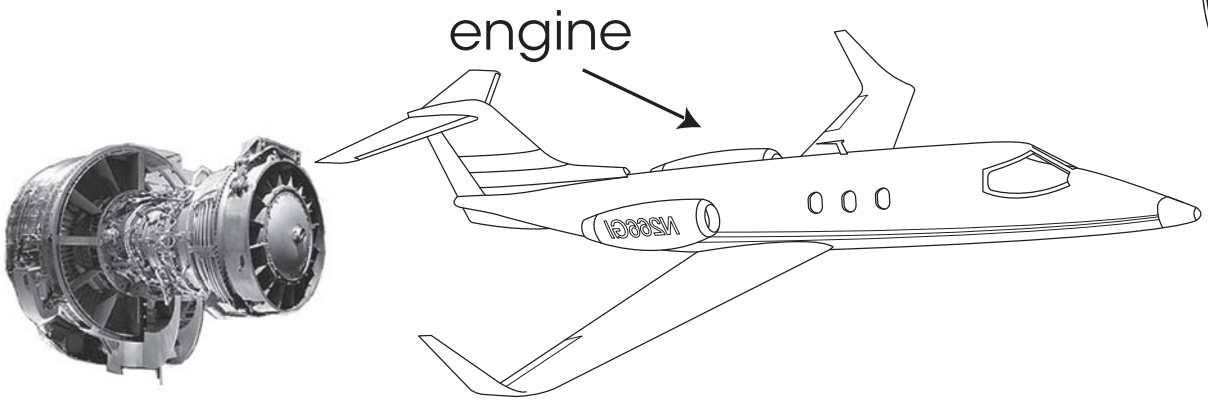




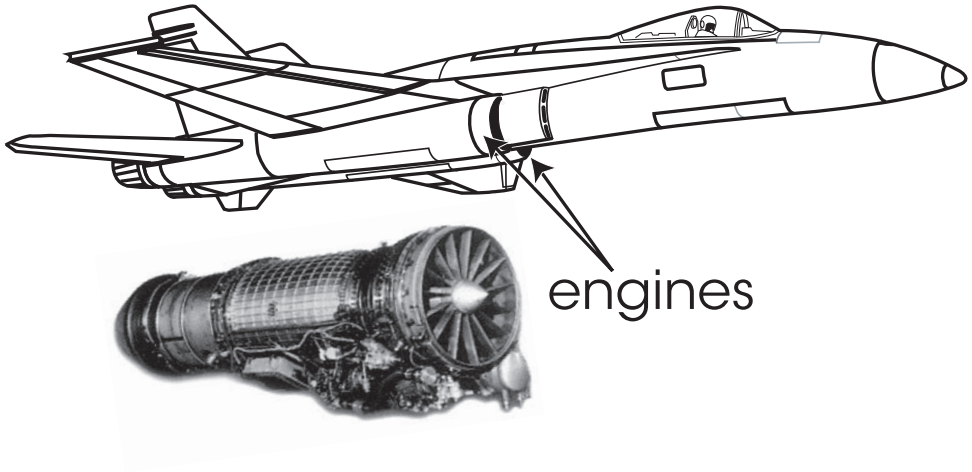
There was an airplane race. Draw a line from the trophy to the aircraft in the order it finished.



1,500 mph



550 mph

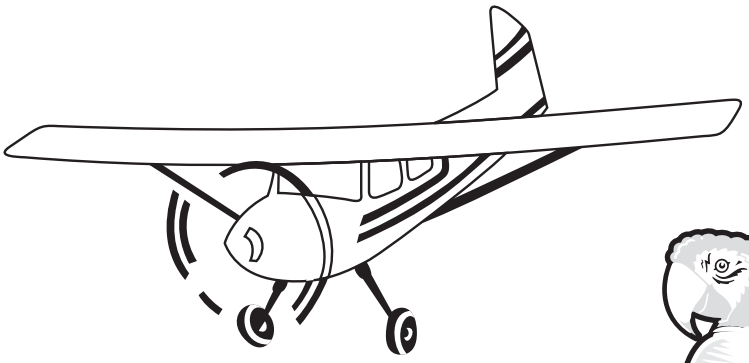


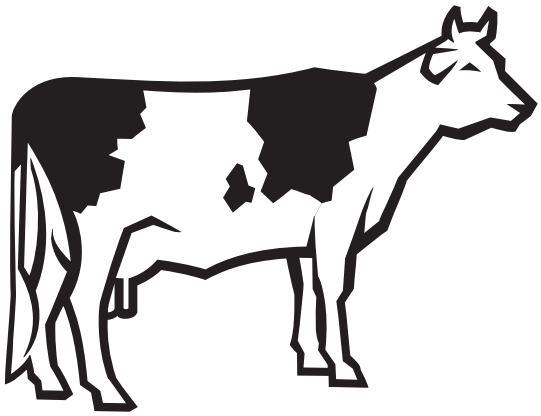
410 mph

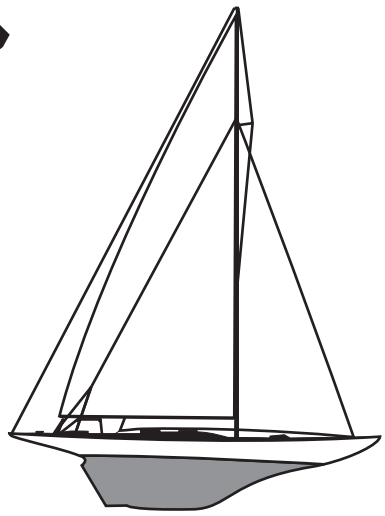
Ff Ff

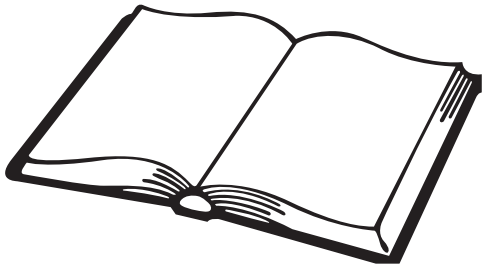
fly

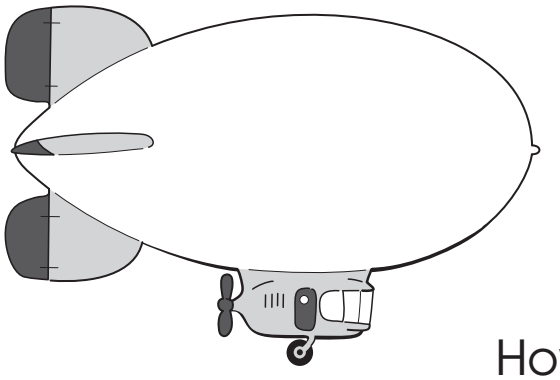
Circle the pictures of the things that fly.

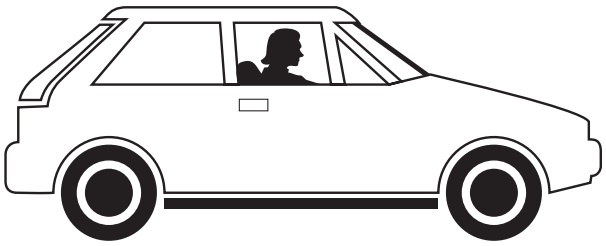












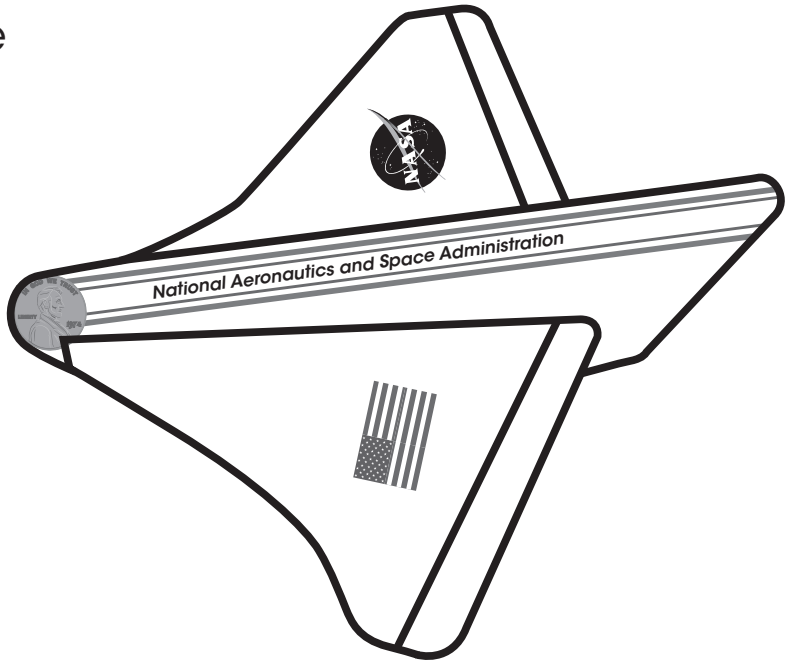
How many did you circle? _____

Gg

glider

Materials Needed

Scissors
Cellophane tape
One penny



Instructions

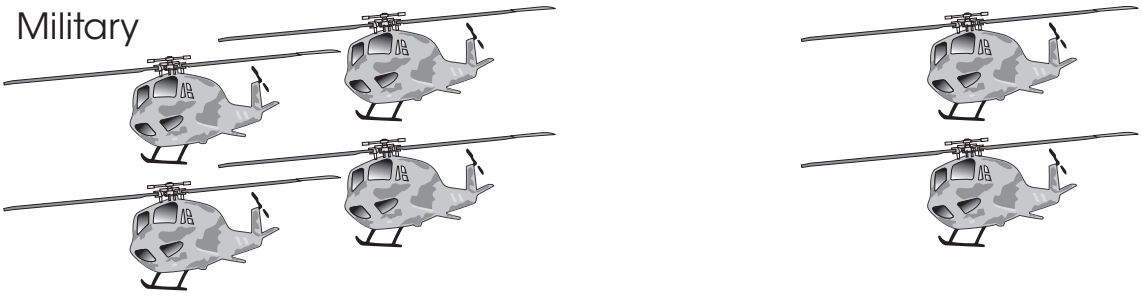
1. Cut out the wing and fuselage patterns that can be found on the back cover of this book.
2. Carefully cut on the wing slot line located on the fuselage.
3. Slide the wing into the slot, making sure that the wing center line is within the fuselage.
4. Tape the wing to the fuselage.
5. Tape the penny to the nose of the fuselage for balance.
6. Bend both elevons upward.
7. Gently toss the **glider**.

Hh Hh

helicopters

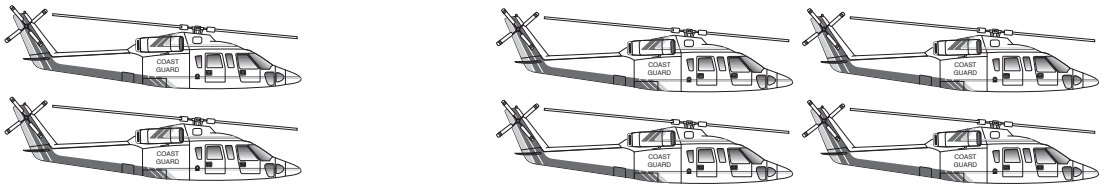
Add the **helicopters** in each group.

Military



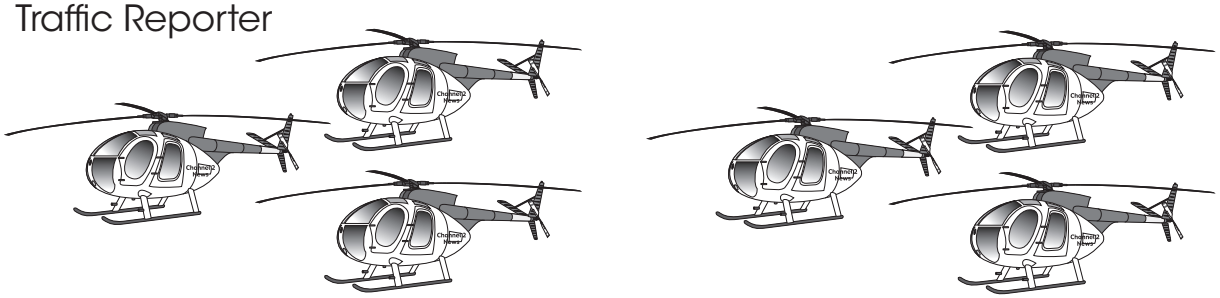
_____ + _____ = _____

Coast Guard



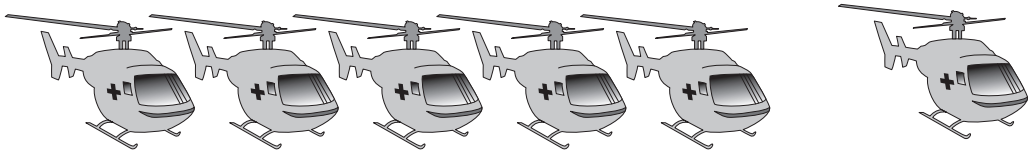
_____ + _____ = _____

Traffic Reporter



_____ + _____ = _____

Emergency Rescue

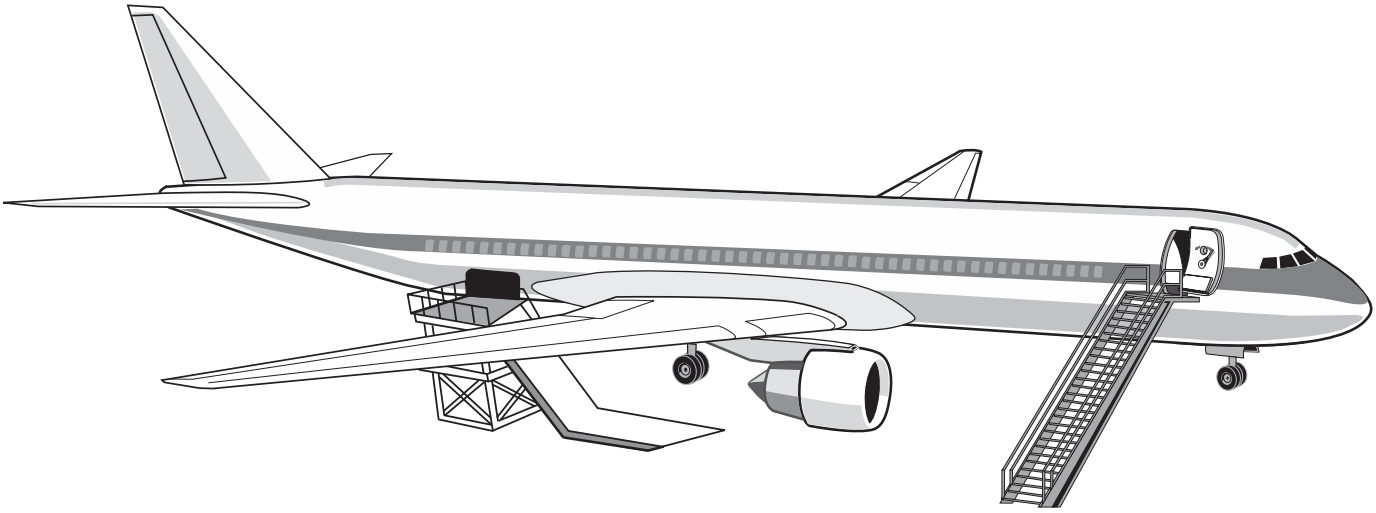


_____ + _____ = _____

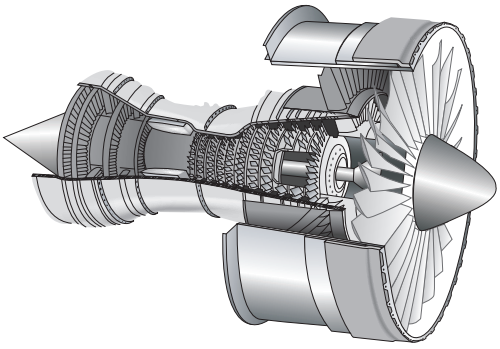
Ii

in

Draw a line to where the passengers, luggage, and engine go **in**to the airplane.



passengers



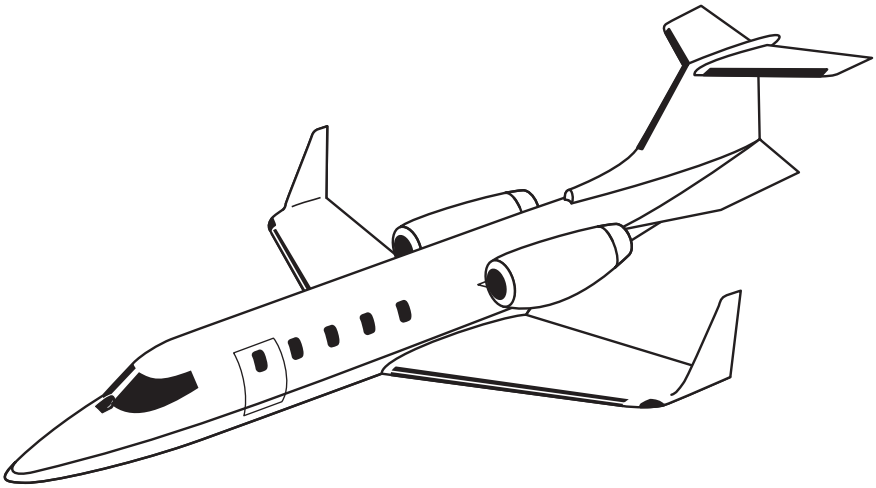
engine

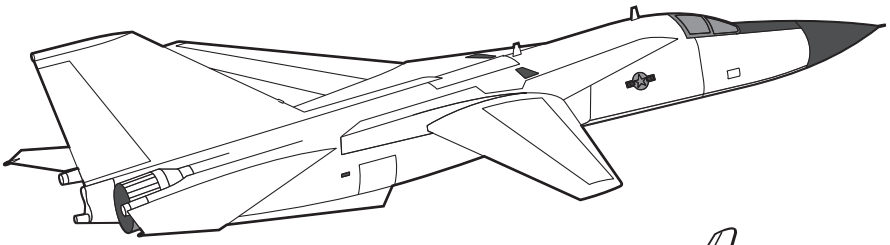
luggage

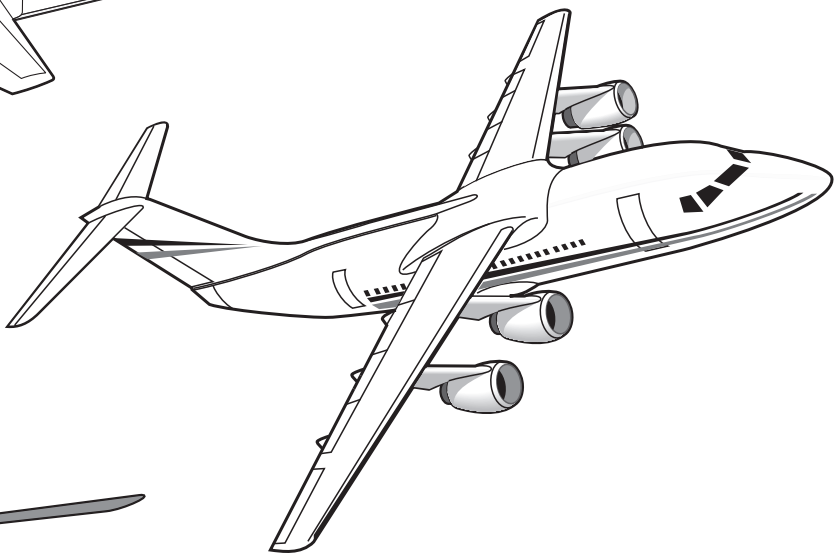
Jj Jj

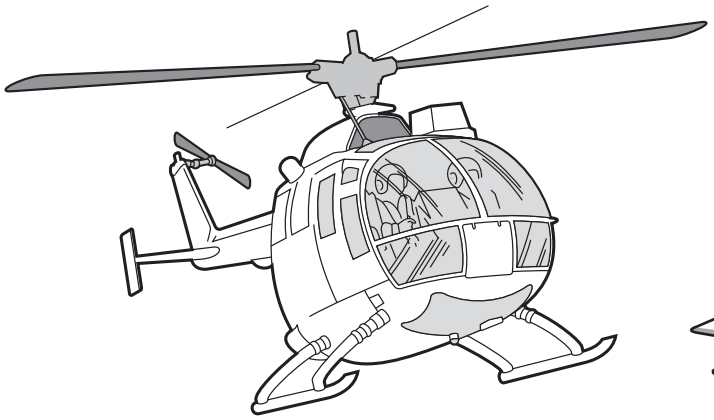
jet

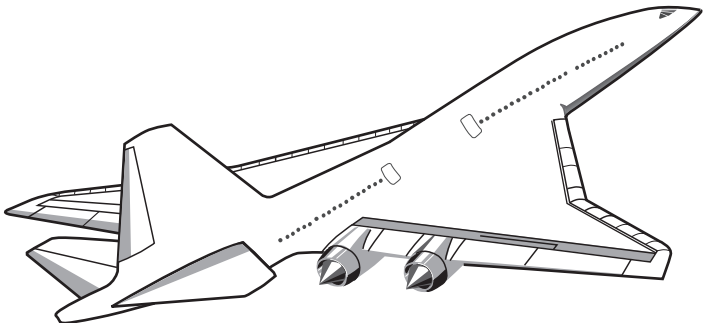
Circle the aircraft that is not a **jet**.





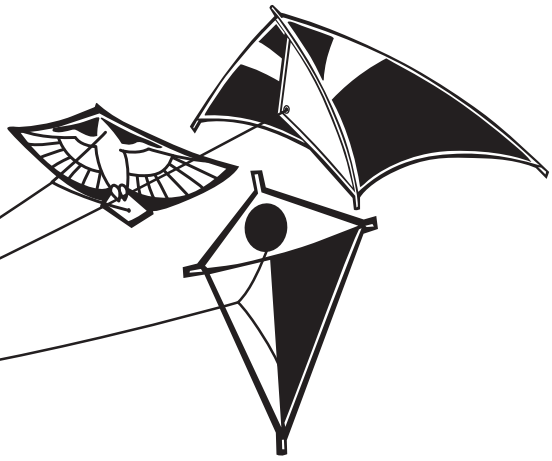




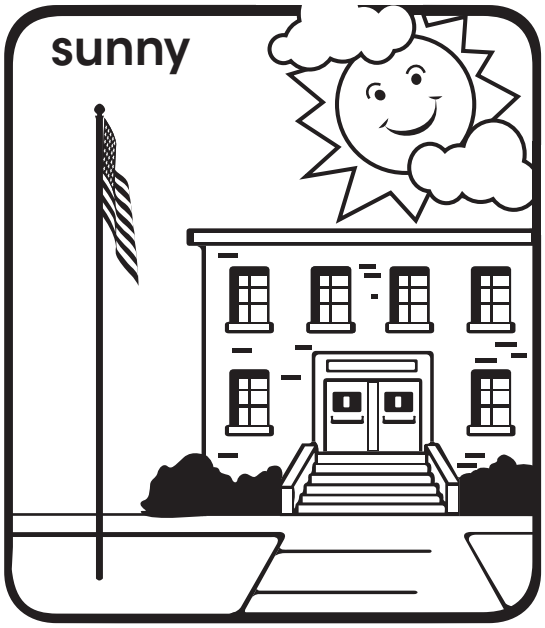


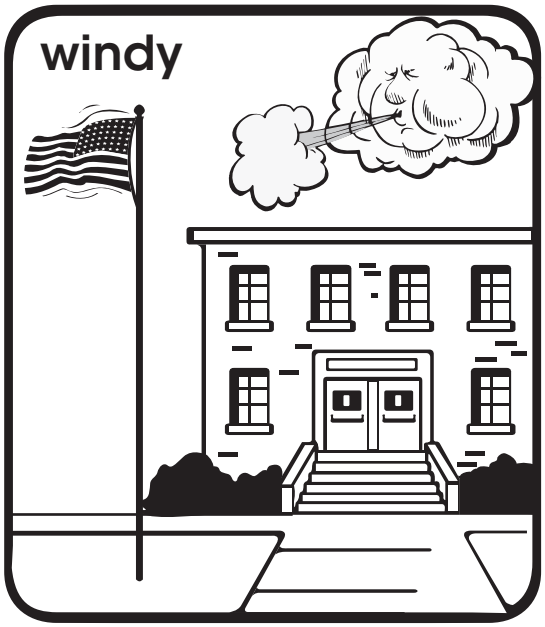
Kk

kite



Color which type of day would be best for flying a **kite**.

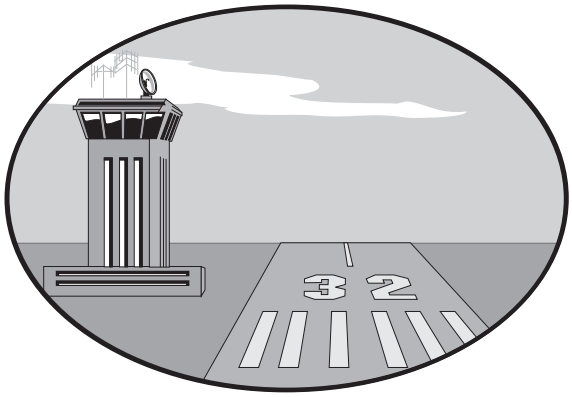


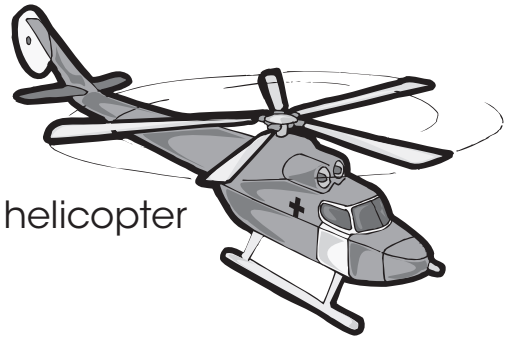


landing

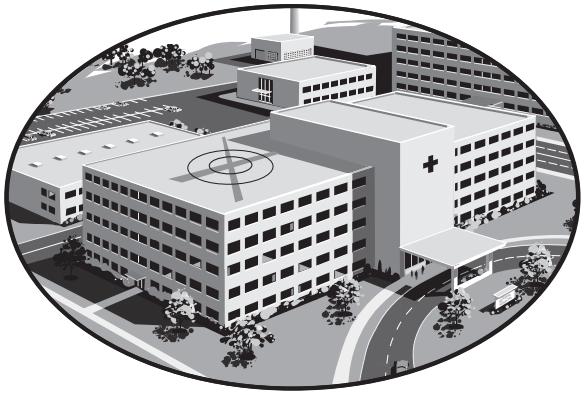
The aircraft below are **landing**. Draw a line to match each aircraft to where it would land.

seaplane





helicopter

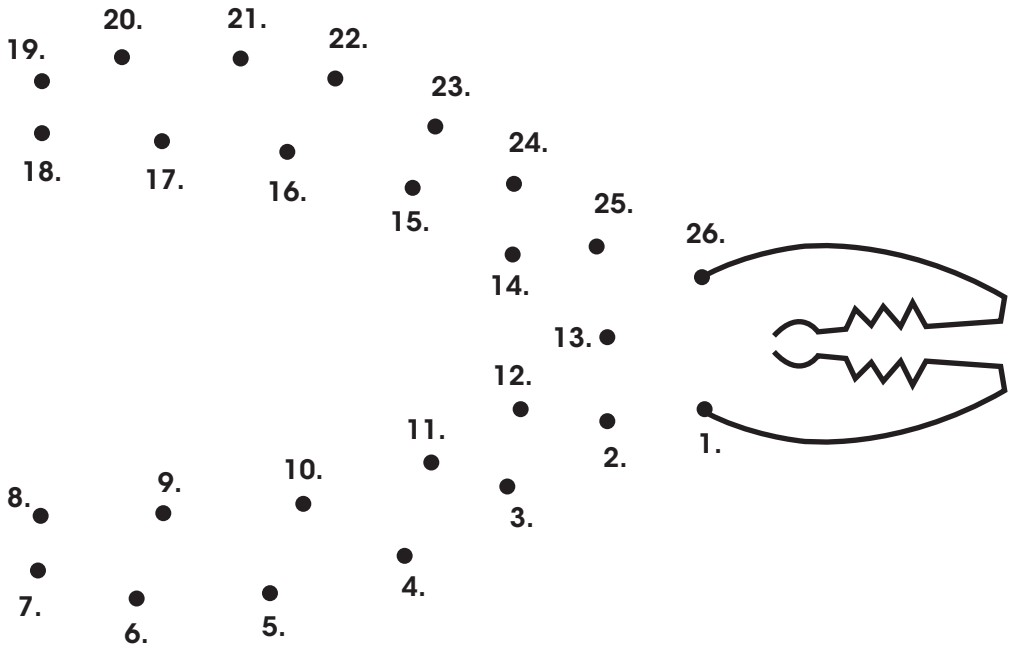


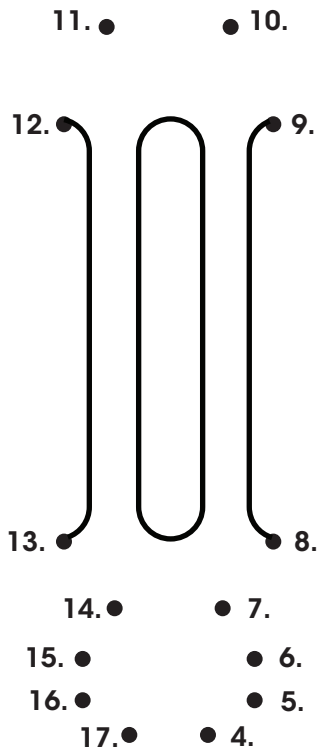
passenger plane

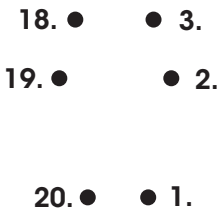
Mm Mm

mechanic

Connect the dots to see what type of tools a **mechanic** uses.



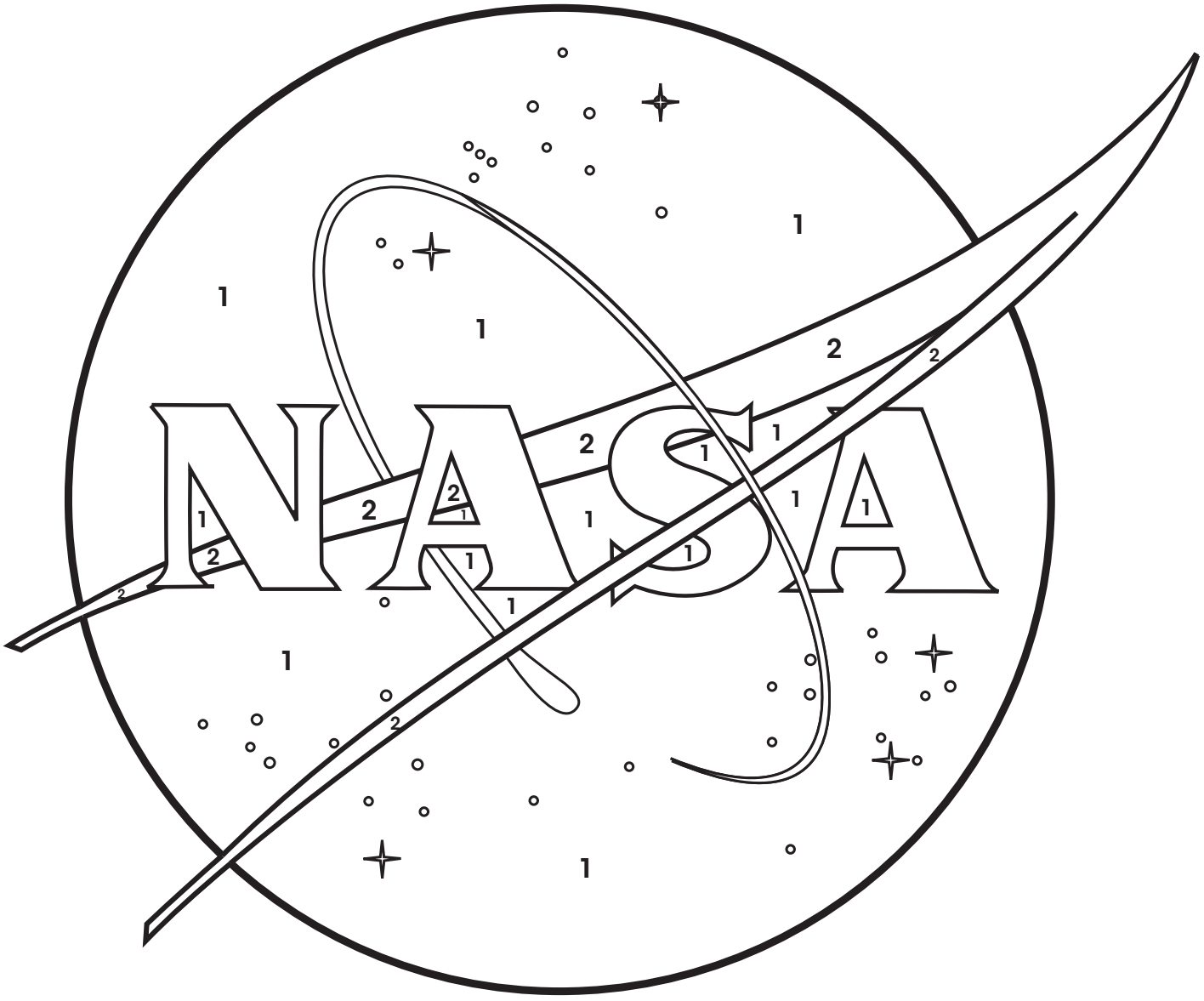




Nn Nn

NASA

National Aeronautics and Space Administration (**NASA**) logo. Color parts of the NASA logo numbered 1 blue and 2 red.



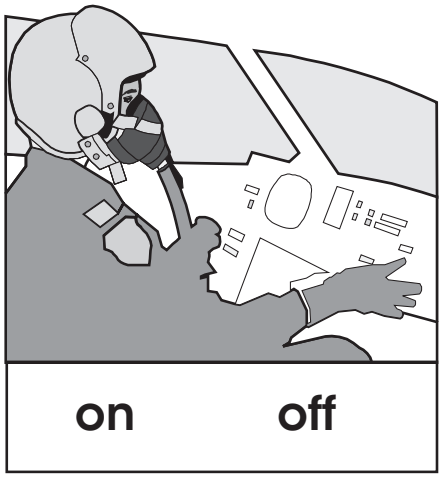
The NASA Insignia (more commonly referred to as the "meatball") reflects the history and tradition of the Agency and is used in all of the Agency's day-to-day communications materials. Designed in 1959 by former NASA employee James Modarelli of NASA Glenn Research Center, the NASA Insignia contains the following elements: the sphere represents a planet, the stars represent space, the vector represents aeronautics, and the orbit represents space travel.

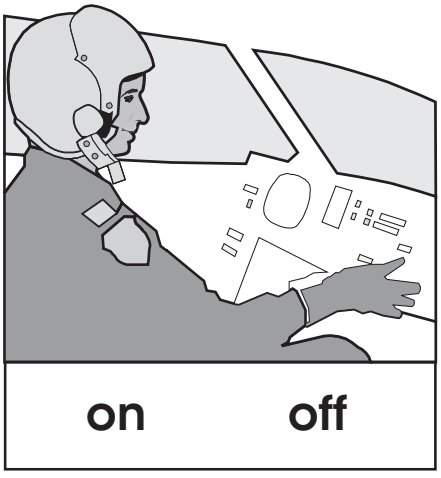
oxygen mask

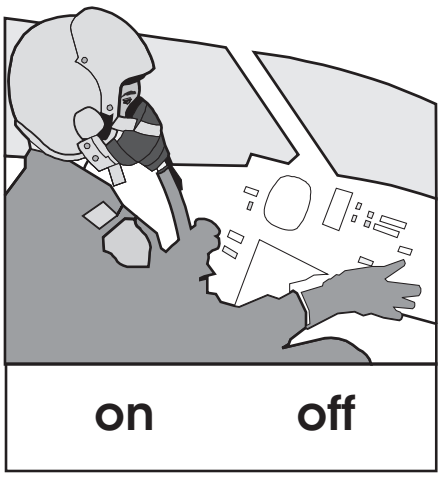
Does the pilot have his **oxygen mask** on or off? Under each picture, circle the word **on** or **off**.

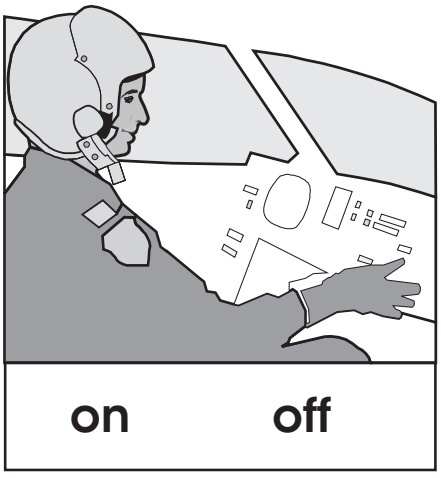
How many pilots have their oxygen masks on? ____

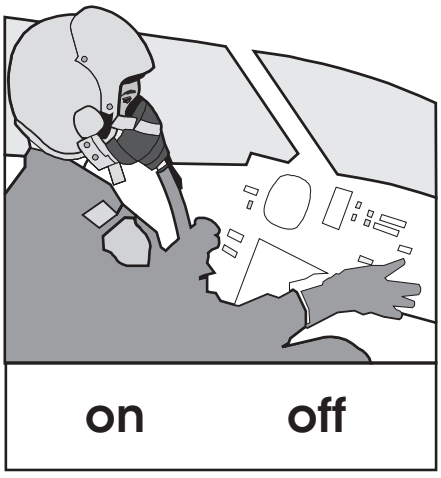
How many pilots have their oxygen masks off? ____

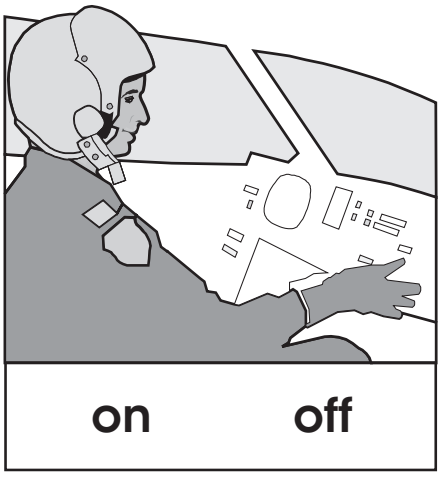












Pp Pp

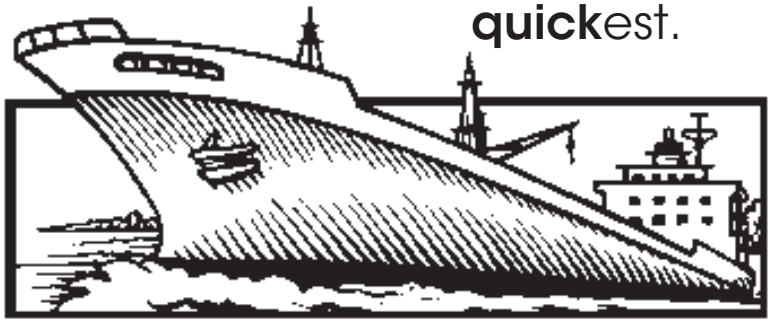
pilot

A **pilot** uses instruments in the cockpit to fly. Color the circles green, the squares red, the triangles yellow, and the rectangles blue.

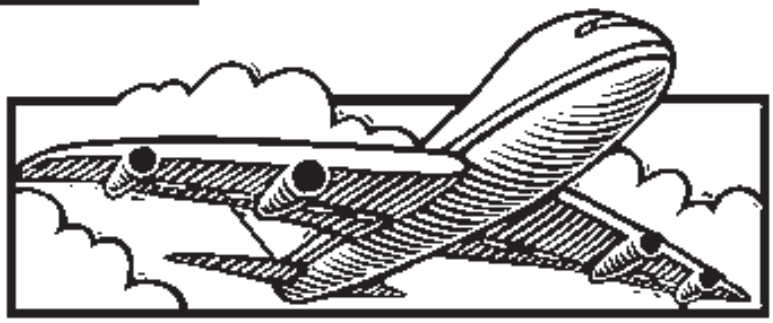
Qq Qq

quick

Your family is going on a trip far away. Under each picture is the time it will take each vehicle to get there. Circle the vehicle that will get you there the **quick**est.



2 weeks

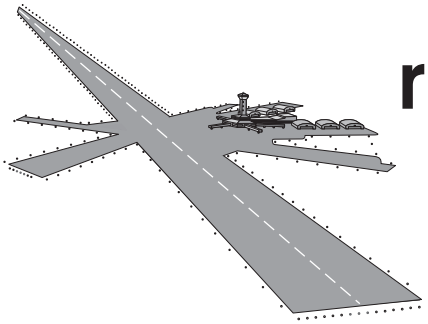


2 hours

1 day

3 days

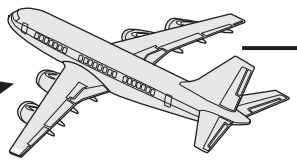
Rr



runway

Help the airplane find the runway through the maze.

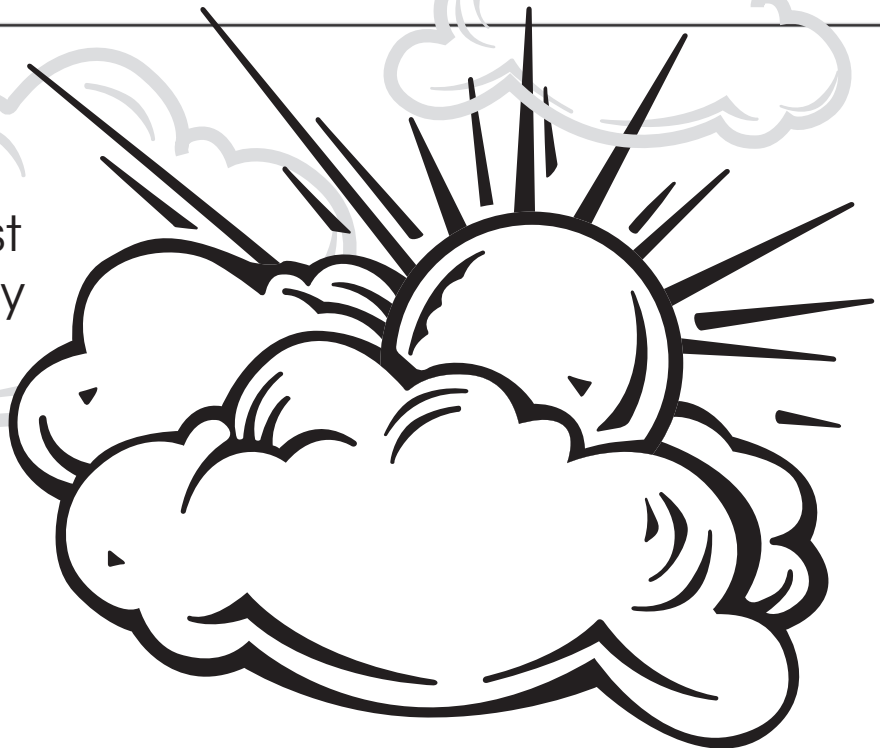
Start here



Ss S s

sky

Draw and color at least three things that can fly in the **sky**.

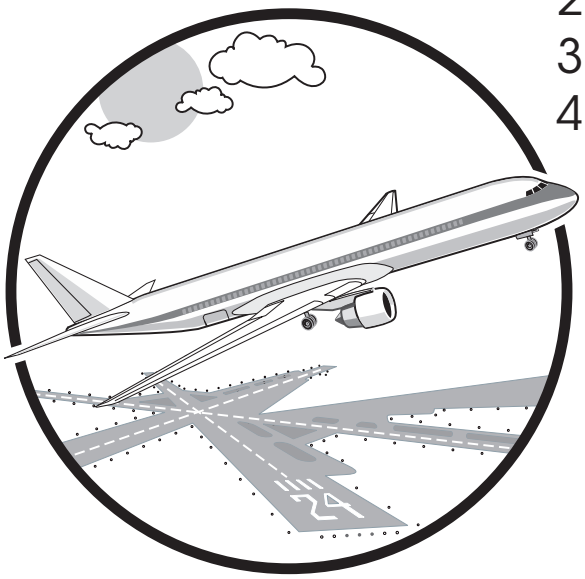


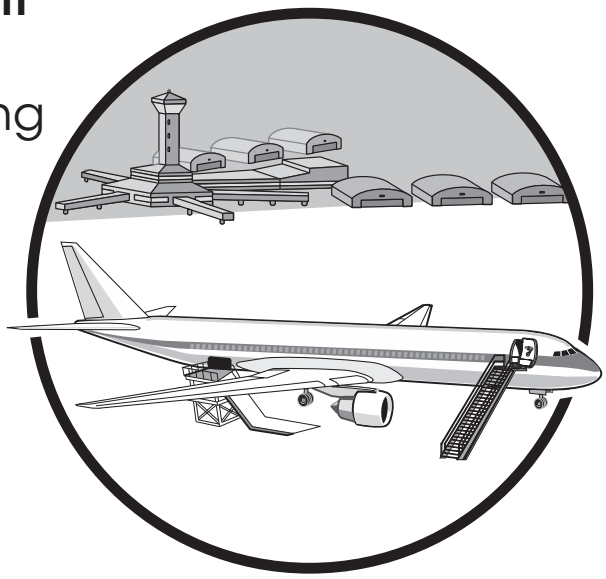
Tt

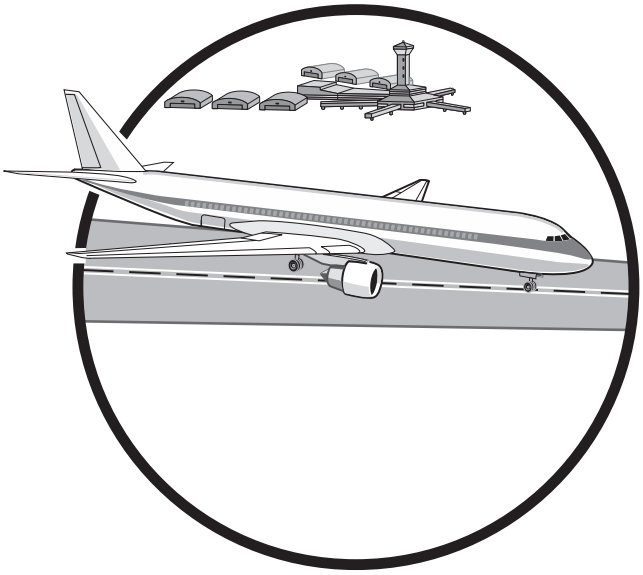
takeoff

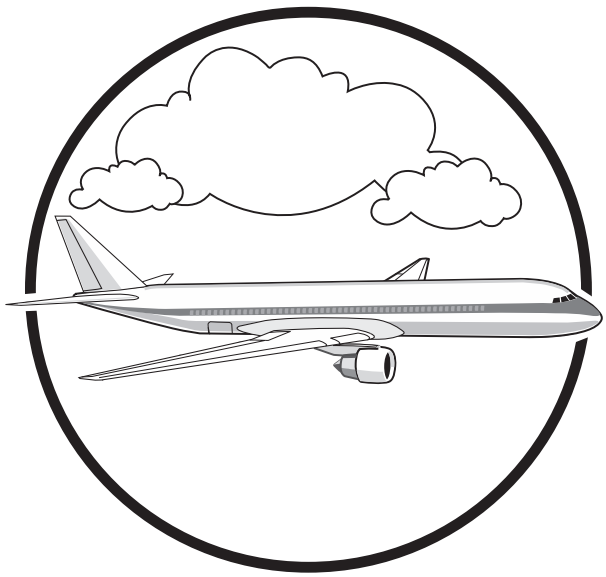
Write the number under the matching picture.

1. Loading
2. **Takeoff**
3. Flying
4. Landing





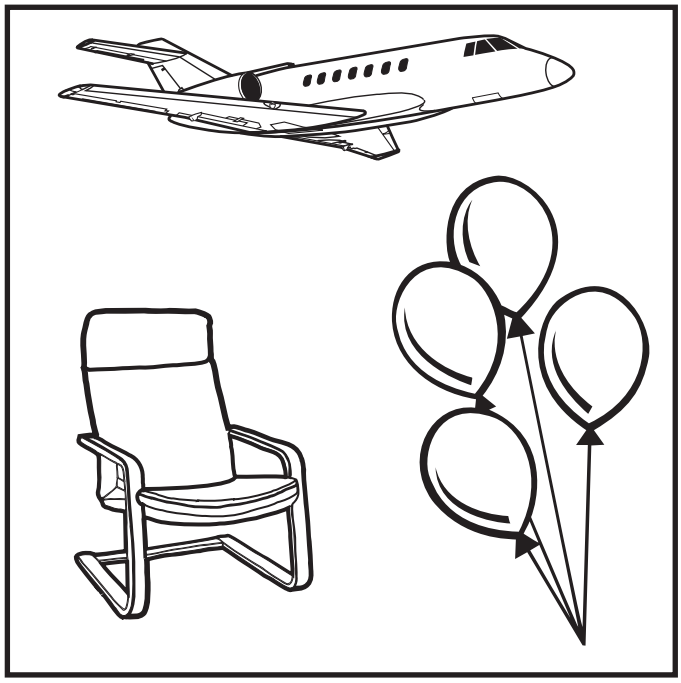


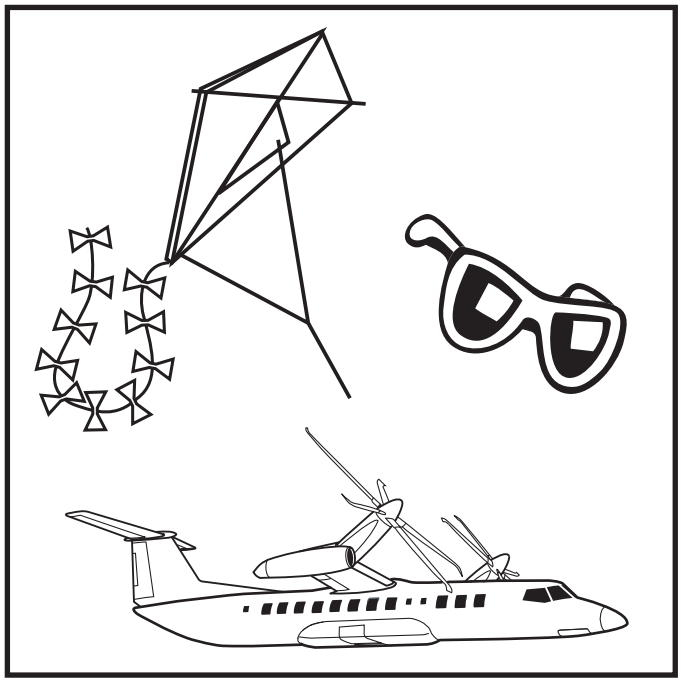


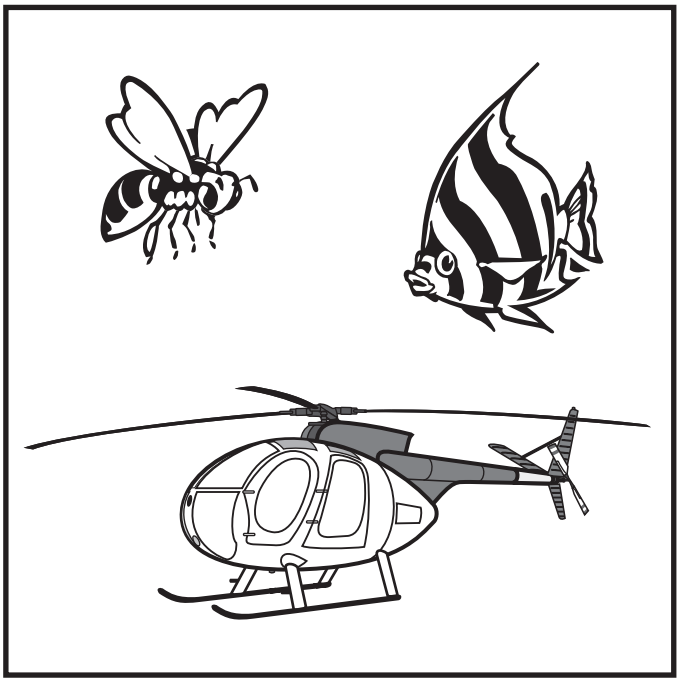
Uu

up

Circle the object in each group that does not go **up** in the air.

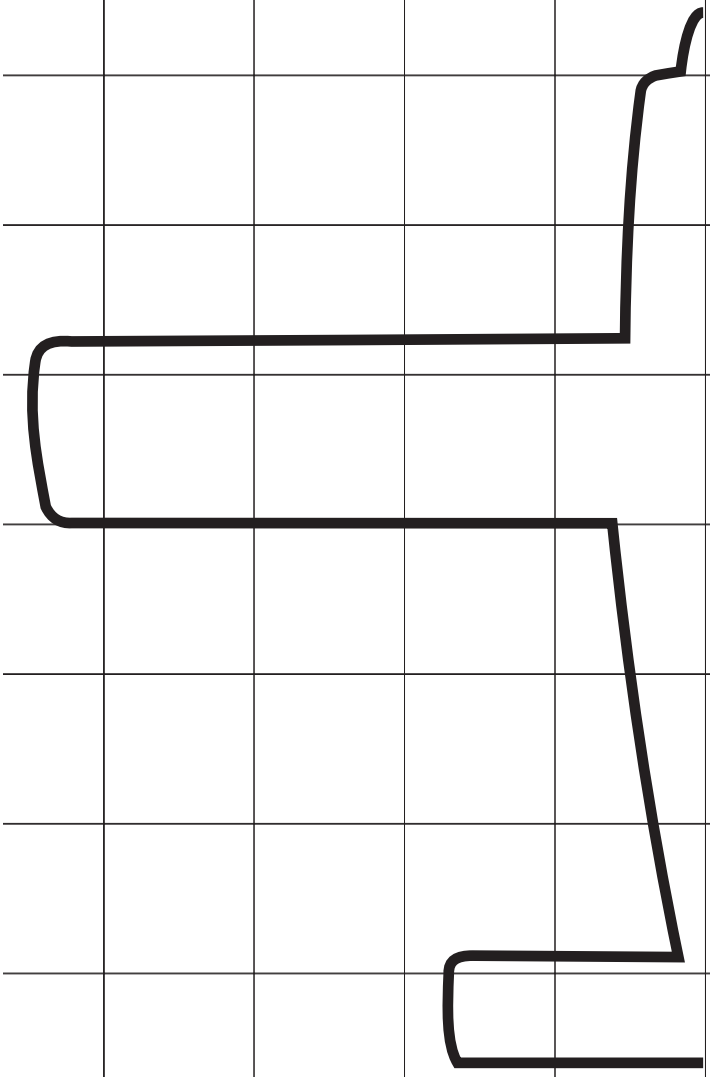






Vv

view To complete the entire **view** of the airplane, draw the other half.

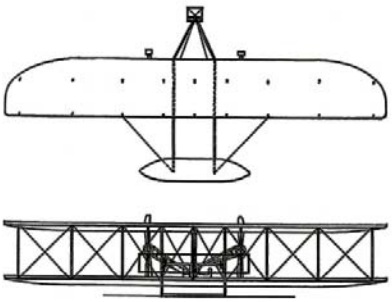


Ww

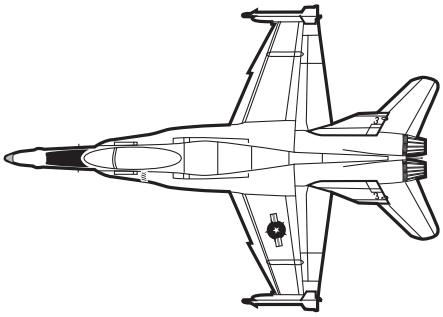
wing

Trace the different **wing** shapes.

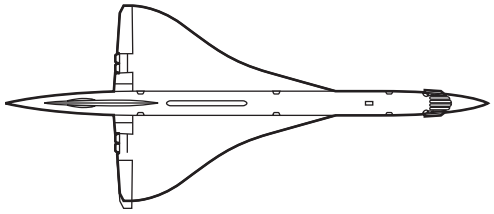
Wright brothers



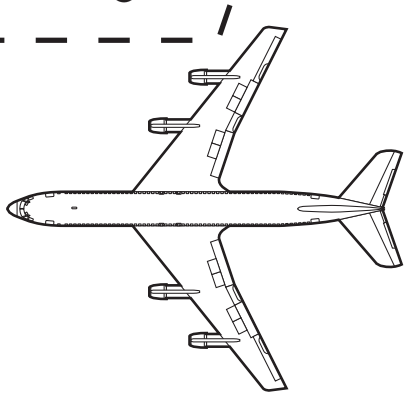
F–18
(Blue Angels)



Concorde



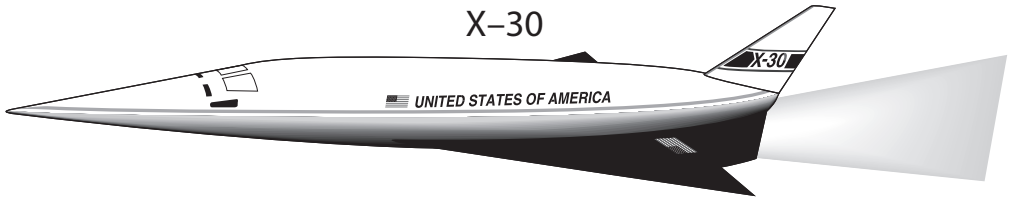
Boeing 747

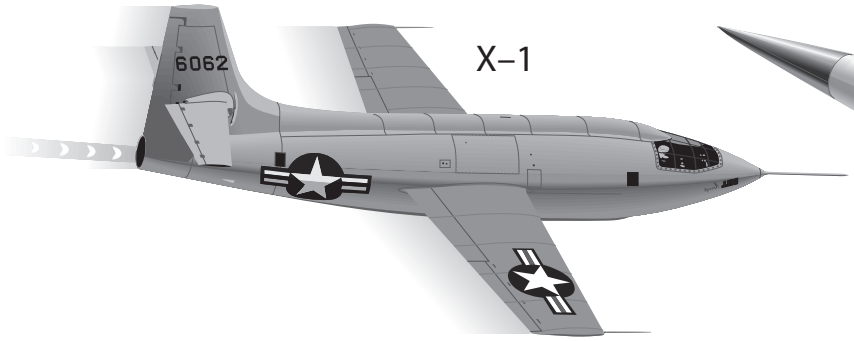


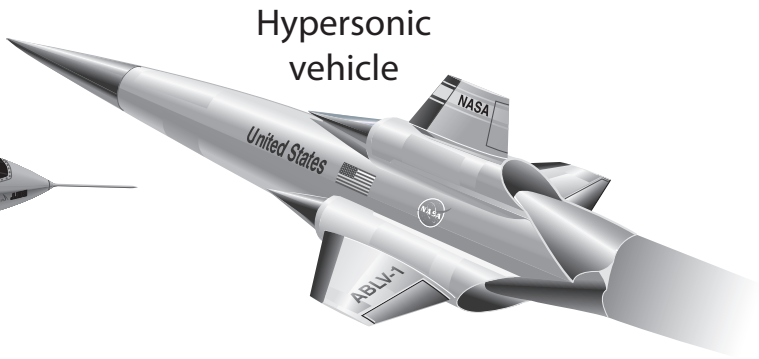
Paper airplane

Xx

X-plane





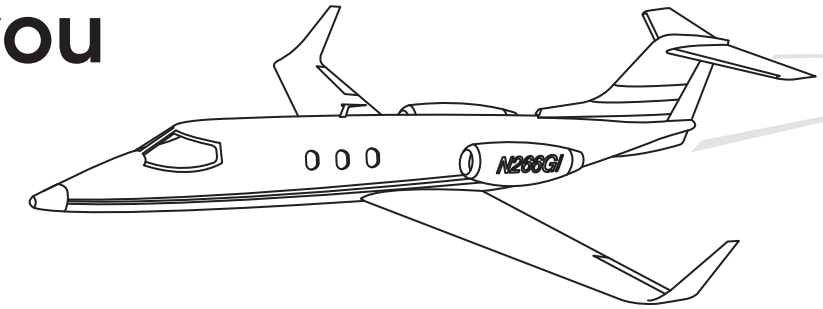


NASA uses test aircraft and space vehicles called **X-planes**. X-plane means experimental (X)-plane. Be an engineer and design your own X-plane in the space below. Give it an X-number and write it under your plane.

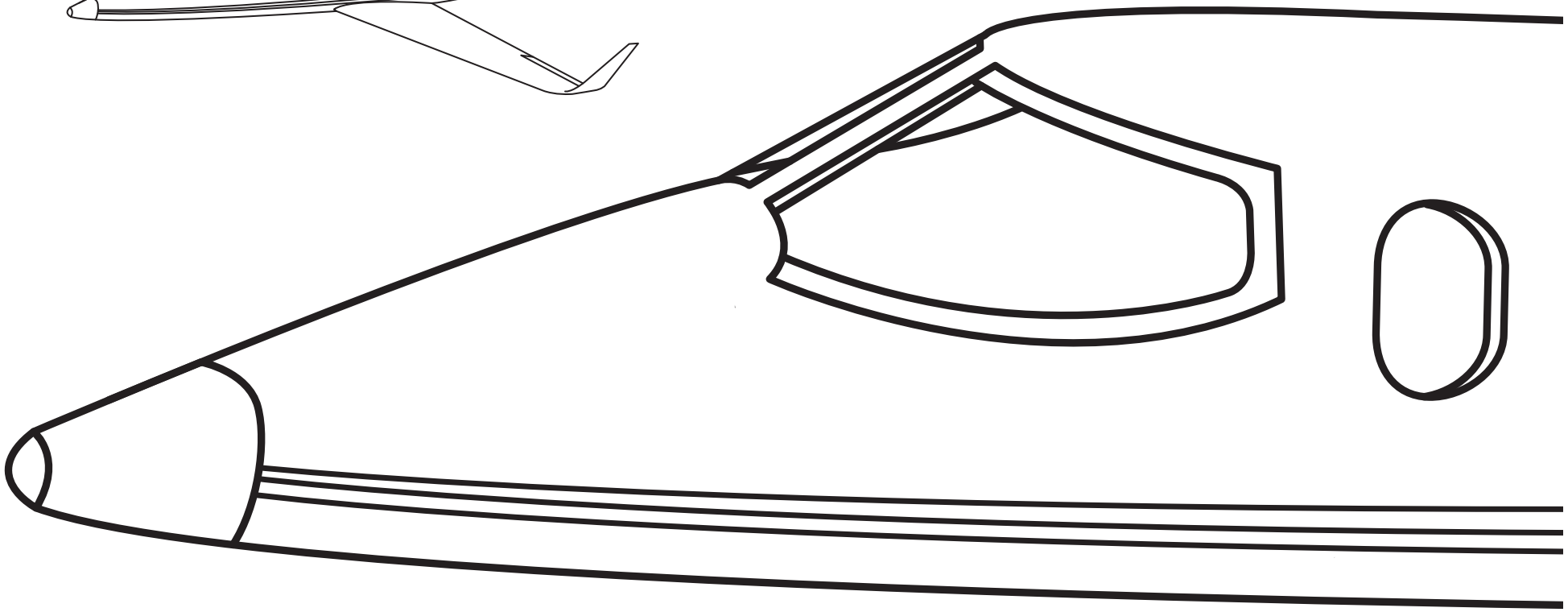
X- _____

Yy

you



Would **you** like to take an airplane ride? Whom would you take with you? Draw their faces in the windows. Don't forget your face!

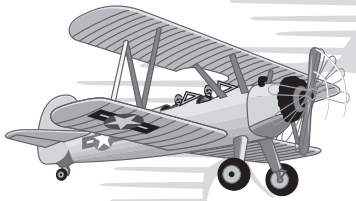


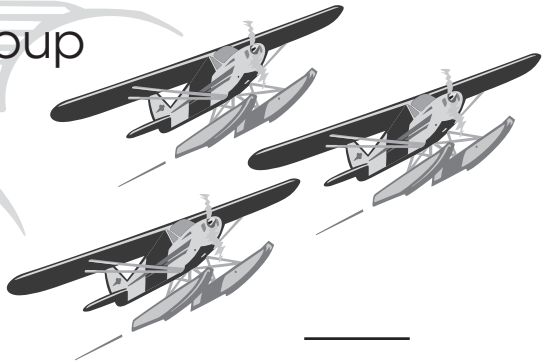
Where would **you** go on your airplane ride? _____

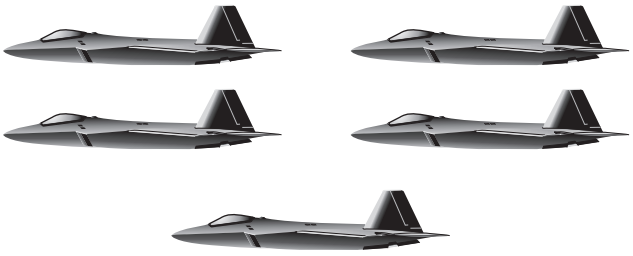
Zz Zz

zoom

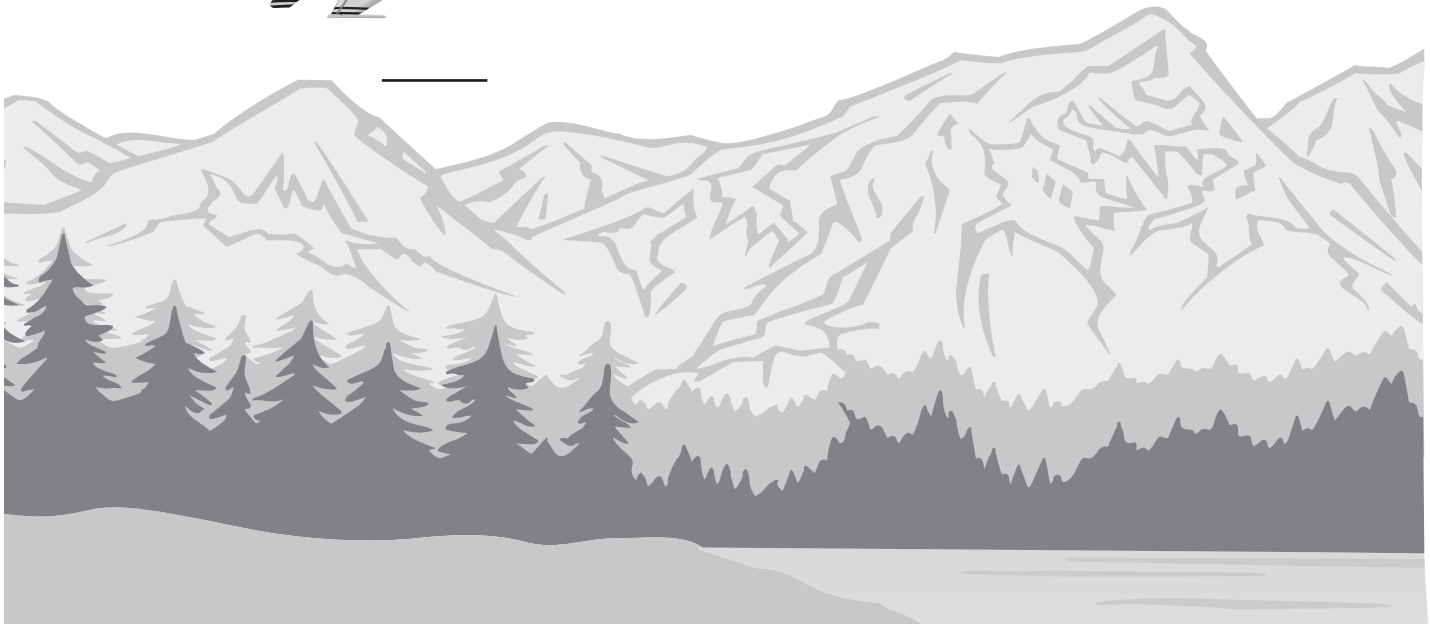
Count the number of airplanes in each group as they **zoom** by.





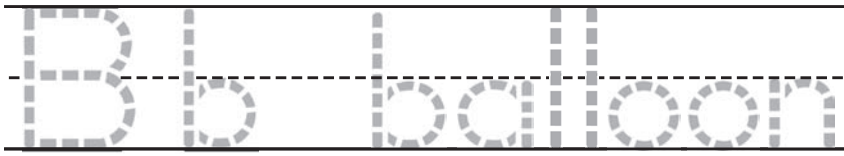


How many airplanes did you count? ____

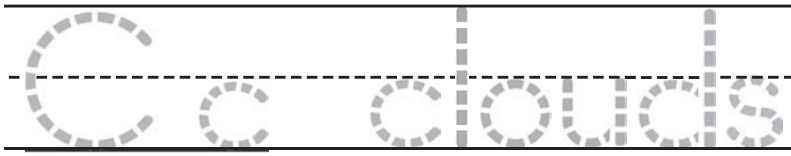


Aa aircraft

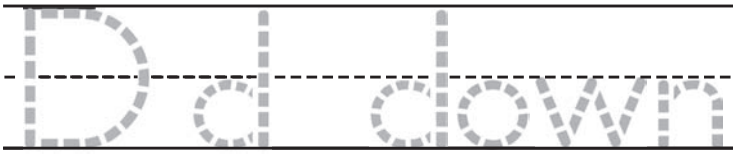
Bb balloon



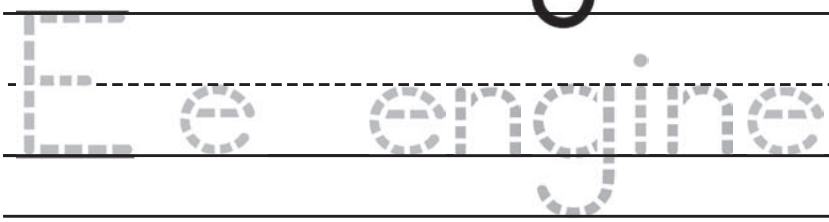
Cc clouds



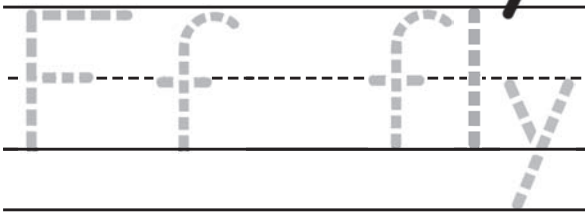
Dd down



Ee engine



Ff fly



Gg glider

Gg glider

Hh helicopters

Hh helicopters

Ii in

Ii in

Jj jet

Jj jet

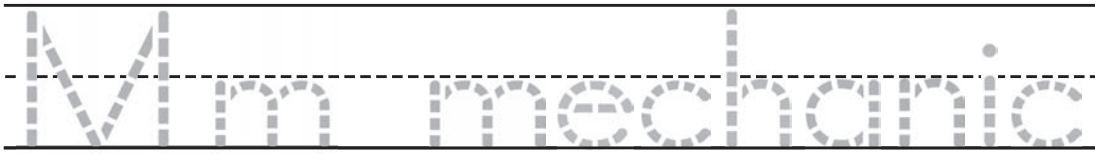
Kk kite

Kk kite

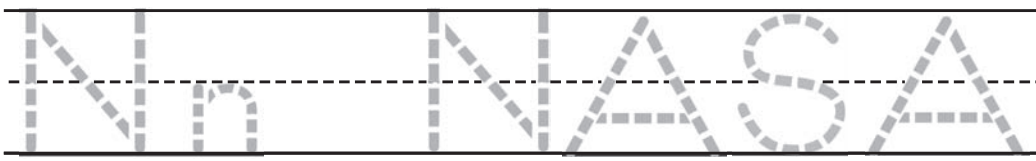
Ll landing

Ll landing

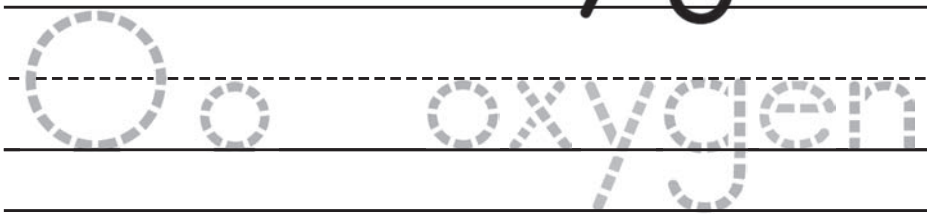
Mm mechanic



Nn NASA



Oo oxygen



Pp pilot

Pp pilot

Qq quick

Qq quick

Rr runway

Rr runway

Ss sky

Ss sky

Tt takeoff

Tt takeoff

Uu up

Uu up

Vv view

Vv view

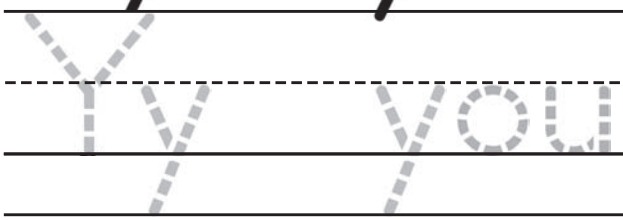
Ww wing

Ww wing

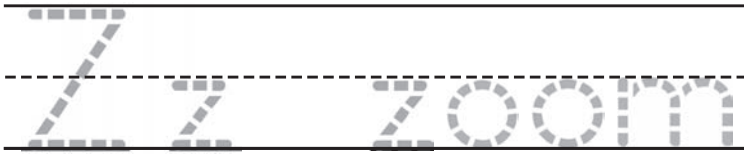
Xx X-plane

Xx X-plane

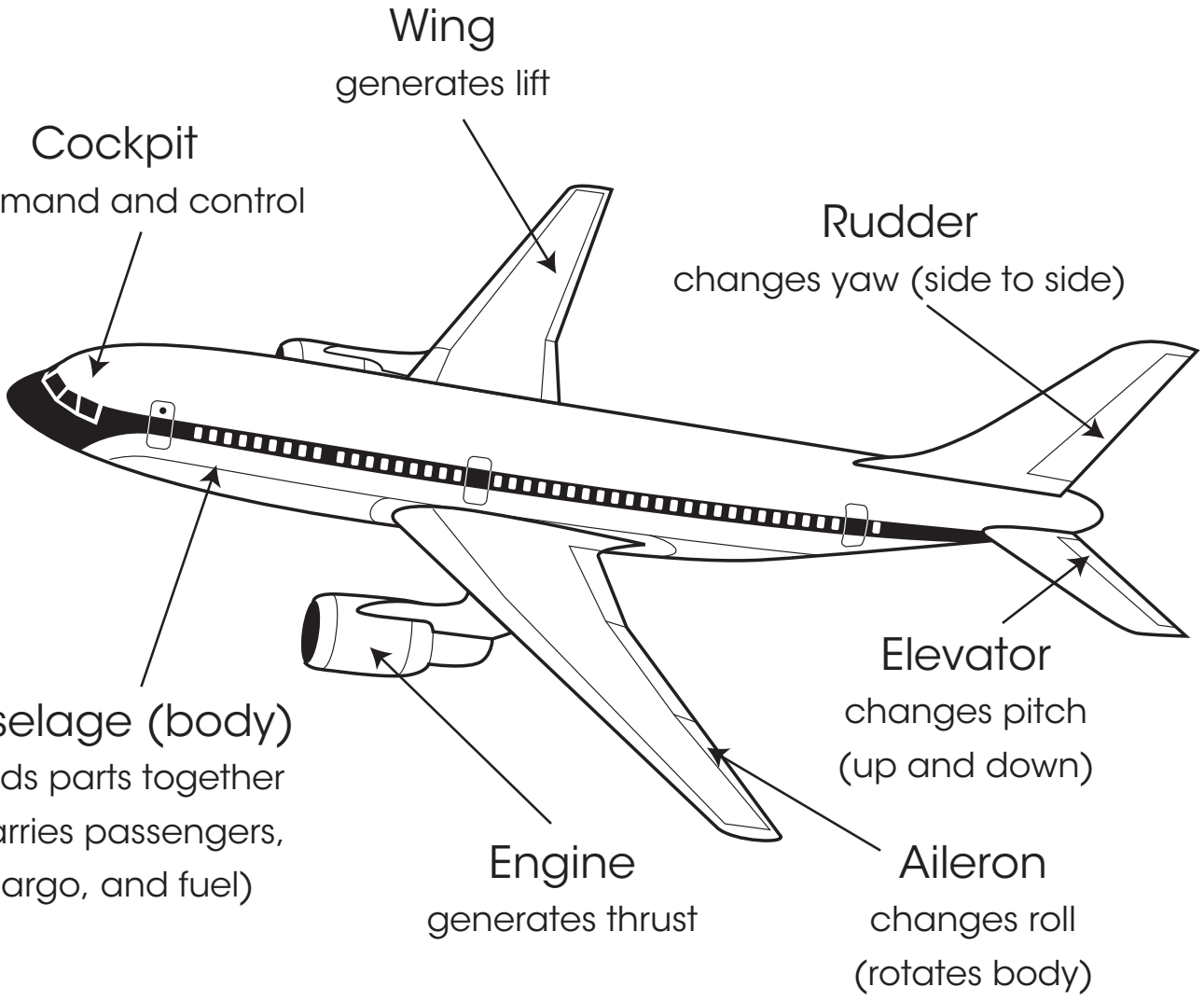
Yy you



Zz zoom



Airplane Parts Definitions



GLOSSARY

Aeronautics
The science of making and flying aircraft.

Aileron
A hinged flap on the back edge of the wing of an airplane; the flap is moved up or down to keep the airplane steady or make a turn in the air (refer to picture on page 40).

Aircraft
1. An item that you can fly or float through the air.
2. Any machine for flying.

Airplane
An aircraft that is kept up by the force of air upon its wings and driven forward by a jet engine or propeller.

Balloon
A large bag or rubber sack that is filled with air or other gases causing it to rise and float in the air.

Clouds
White or gray objects that float in the air and contain tiny water drops.

Cockpit
A place where the pilot or crew sits to control the aircraft (refer to picture on page 40).

Elevator
A part of the tail of an airplane that can be moved to make the airplane go up or down (refer to picture on page 40).

Elevon
A control surface on an airplane that combines the functions of an elevator and an aileron.

Engine
A machine, such as an aircraft engine, that uses energy of some kind to create motion and do work (refer to picture on page 40).

Engineer
A person trained and skilled in the design, construction, and use of engines, machines, or other devices of industry and everyday life.

Experimental
Having to do with a test or series of tests to find out if something is correct.

Fuselage
The main structural body of an aircraft to which the wings and tail are attached (refer to picture on page 40).

Glider
An aircraft that has no engine and is carried along by air currents.

Helicopter
A kind of aircraft that has a large propeller fixed on top and no wings; it can be flown backward, forward, straight up, and down.

Instrument
A mechanical or electronic measuring device that gives pilots information they need to fly their airplanes safely.

Jet
An airplane that moves very quickly and is jet propelled.

Kite
A tethered glider that is lifted by the wind.

Landing
The act of coming down after flying.

Loading
Putting something to be carried into or upon an aircraft.

Luggage
The suitcases, trunks, baggage, and belongings of a passenger.

Mechanic
1. A worker skilled in making, using, or repairing machines, vehicles, and tools.
2. A person who repairs and maintains aircraft.

Oxygen mask
A mask placed over the mouth and nose and through which oxygen is supplied from an attached storage tank.

Parachute
A large cloth device that opens up like an umbrella and is used for slowing down a person or thing dropping from an airplane.

Passenger
A person traveling in an airplane but not helping to operate it.

Pilot
A person who operates an airplane, balloon, or other aircraft.

Propeller
A set of blades driven by an engine that pull or push an airplane through the air.

Runway
A surface on the ground specifically used for aircraft takeoffs and landings.

Rudder
A hinged, vertical flap at the rear of an aircraft; used for steering (refer to picture on page 40).

Seaplane
Any airplane designed to land on or take off from water.

Takeoff
The act of rising from the ground, especially in an aircraft.

Vehicle
An object that moves people, such as an automobile, bicycle, or aircraft.

View
A way of seeing or looking at something.

Wing
The part of an airplane that produces lift (refer to picture on page 40).

X-plane
A special vehicle designed for experimental flight tests.

Source definitions:

"Webster's Student Dictionary," SMITHMARK Publishers, New York, NY, 1999.
http://www.dictionary.com

"Flight," The Nature Company Discoveries Library, Time-Life Books, 1995.

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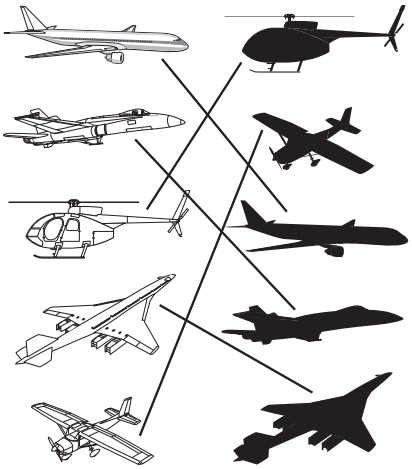
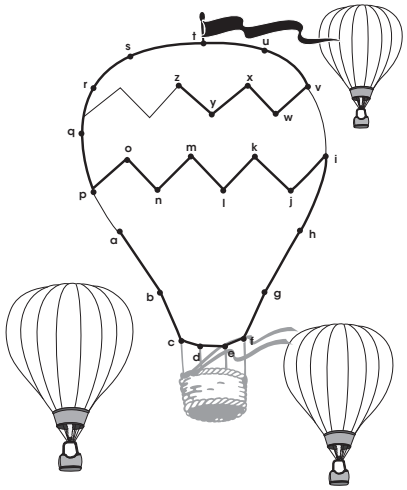
http://www.littleexplorers.com/Dictionary.html

Answer page

Aa



Bb



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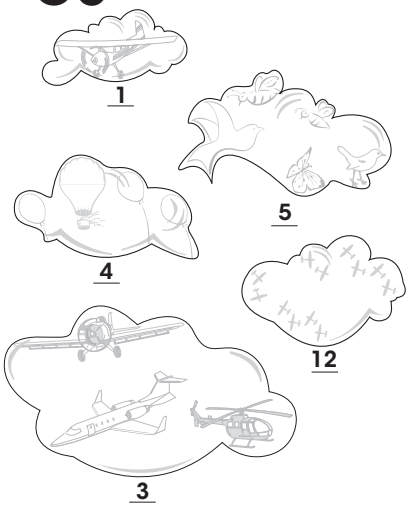

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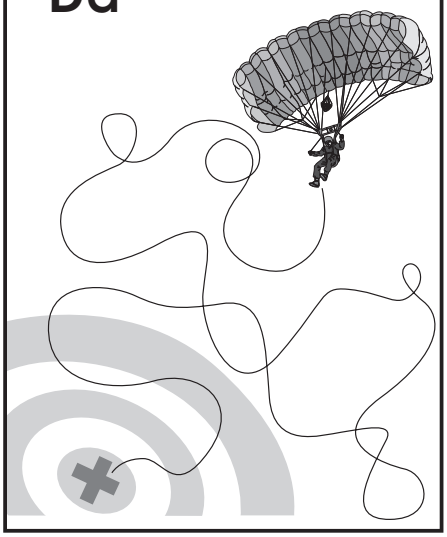

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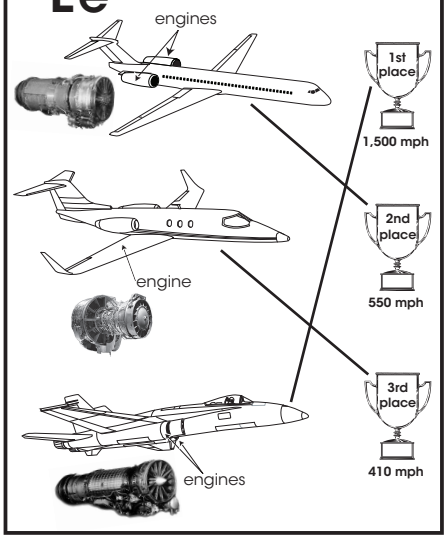

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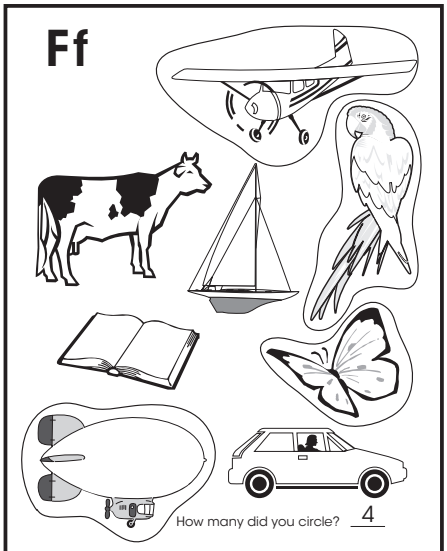
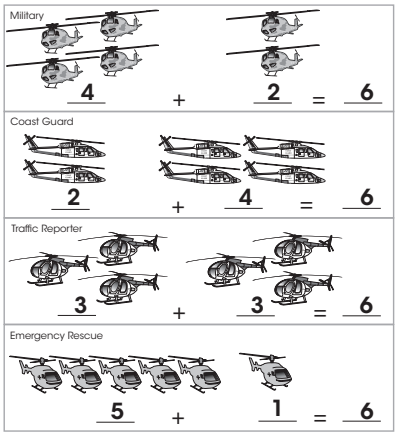


Gg

Assemble Glider

Hh



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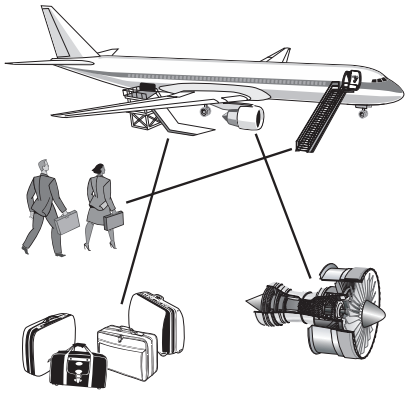

Answer page

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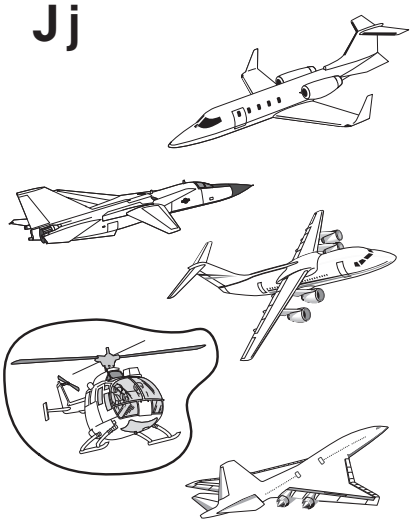

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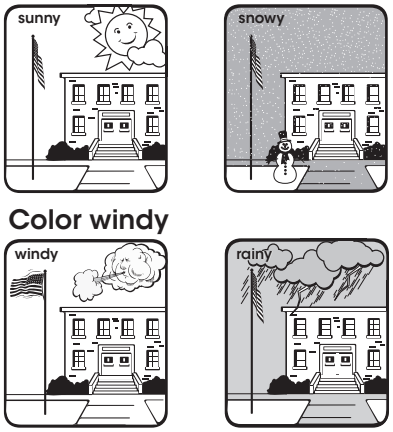
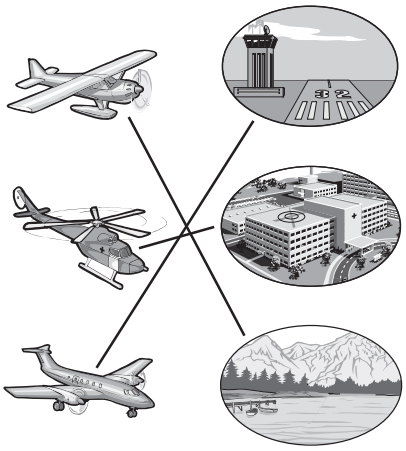


Color windy

Ll



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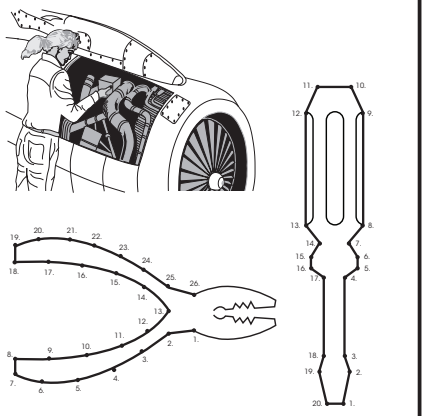
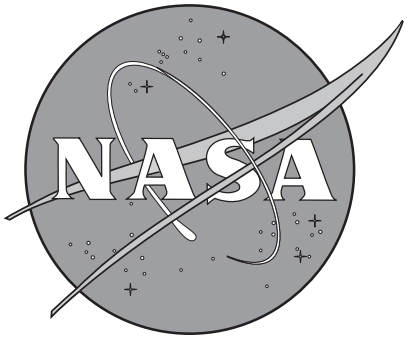


pliers screwdriver

Nn

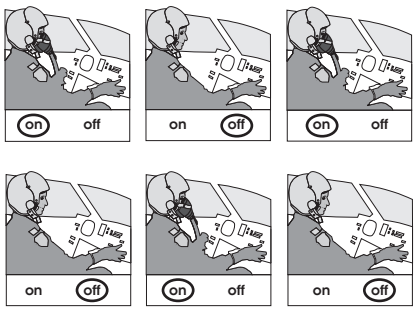


Oo

Does the pilot have his oxygen mask on or off? Under each picture, circle the word on or off.

How many pilots have their oxygen masks on? 3

How many pilots have their oxygen masks off? 3



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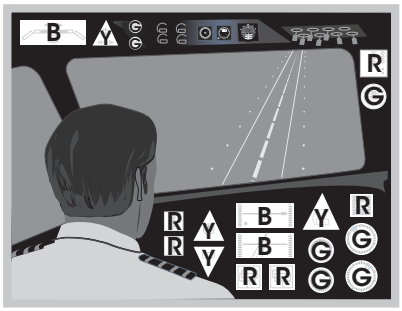

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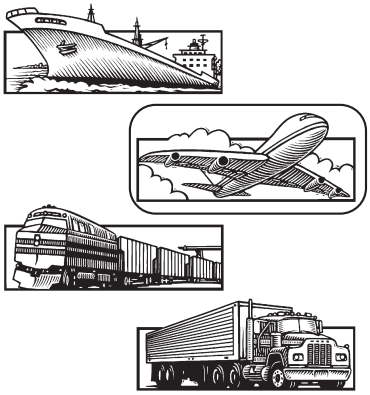

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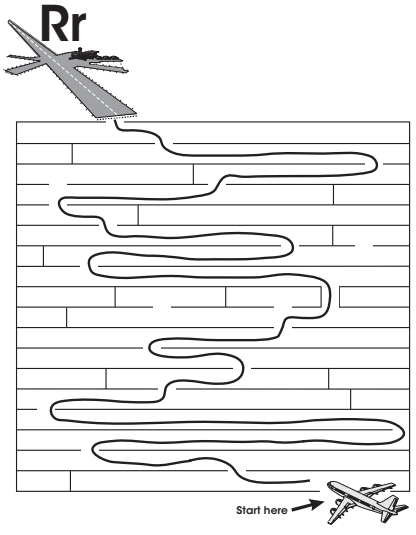
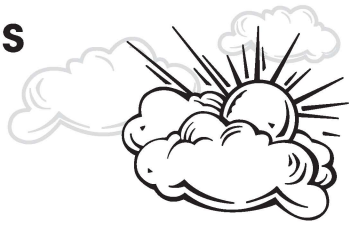


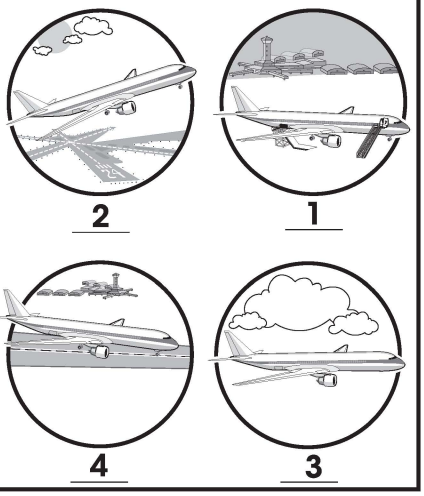
Answer page

Ss



Your own drawings here.

Tt



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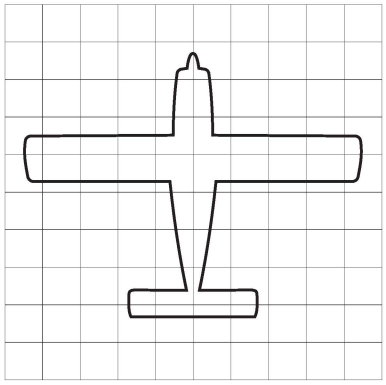

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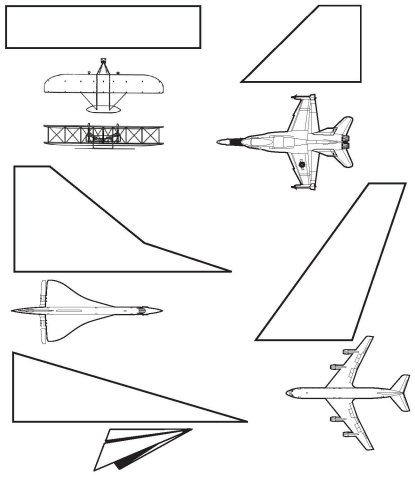

Xx

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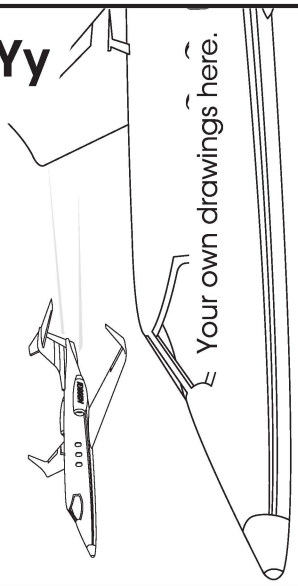
Yy

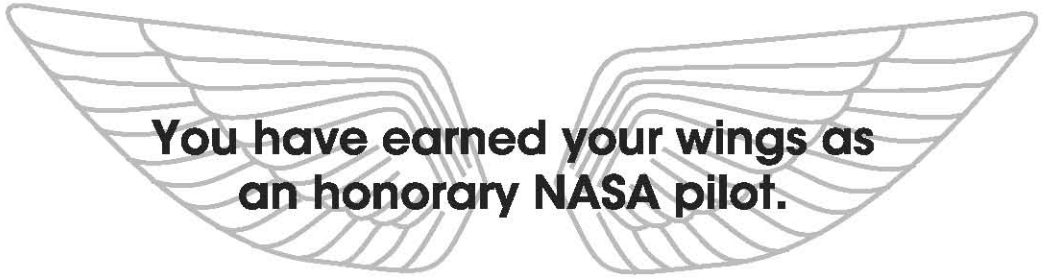


Zz

Congratulations

on completing the

High Flyers Alphabet Activity Book



You have earned your wings as an honorary NASA pilot.

Print your name on the lines above

Acknowledgments

Thanks to the High Flyers Alphabet Activity Book team for their invaluable suggestions and fortitude to see this book come to fruition. Thanks also to the teachers who provided our team with ideas and feedback and, most important, the NASA Headquarters Aeronautics Research Mission Directorate for funding this outreach activity.

Team Members

Brontie DeFreitas-Fox, Communications Support Services Center
Carol Galica, Office of Educational Programs
Kelly Ison, Subsonic Systems Office
Shanessa Jackson, Office of Educational Programs
Susan Johnson, Subsonic Systems Office
Jenay Sharp Leach, Aeronautics Research Mission Directorate Education
Marge Lehky, Office of Educational Programs
Kelly Shankland, Logistics and Technical Information Division
Linda Skrada, Subsonic Systems Office
Tony Springer, Aeronautics Research Mission Directorate Education
Renee Yoder, Office of Educational Programs

Glider